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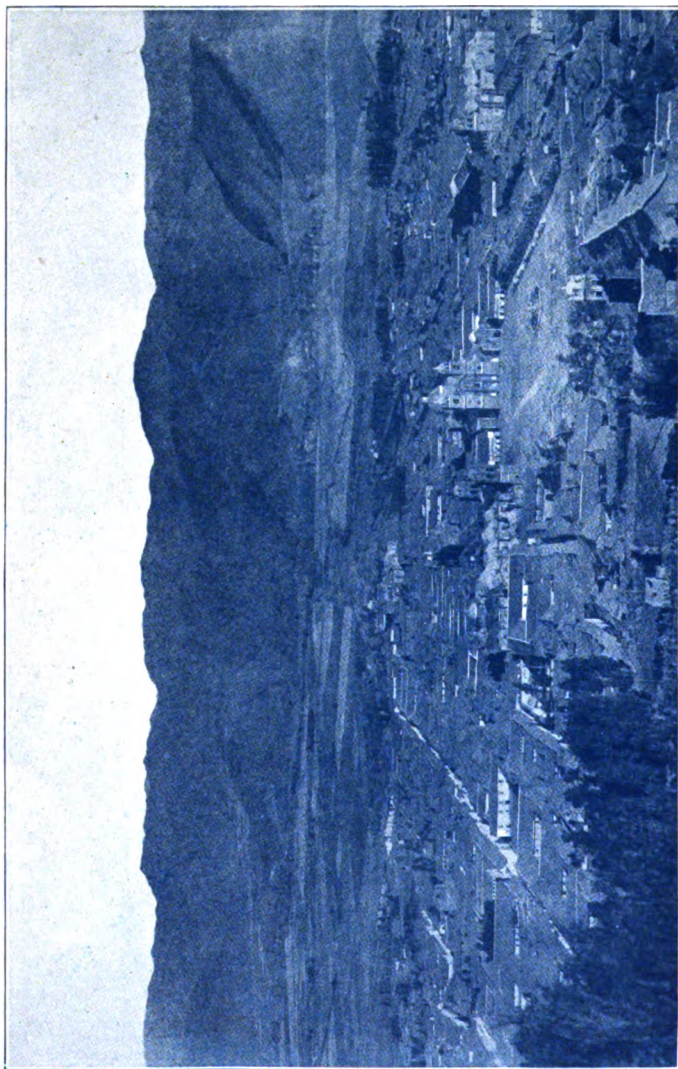
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THE ANDEAN LAND



GENERAL VIEW OF MAIN PLAZA AT CUZCO, PERU
Showing Cathedral and Jesuit Church

THE ANDEAN LAND

(SOUTH AMERICA)

BY

CHASE S. OSBORN

MEMBER OF THE BOARD OF REGENTS OF THE UNIVERSITY
OF MICHIGAN

WITH OVER FIFTY ILLUSTRATIONS AND FOUR MAPS

IN TWO VOLUMES

VOL. II.



CHICAGO

A. C. McCLURG & CO.

1909

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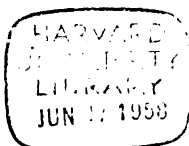
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THE ANDEAN LAND

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TO the world at large the Himalayas are better known than the Andes. Offhand, everybody knows the highest of the Himalayas, and very many know of the glories of the Kinchinjunga, while not one in a hundred, or maybe a thousand, or even fewer, know the name of the majestic Aconcagua, though it is the ruling pinnacle of not only the Andes, but the Western Hemisphere, unless it shall be determined, as

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claimed, that some of the Peruvian peaks are slightly higher, and almost two miles higher than Shasta and Rainier, the loftiest mountains in the United States, and a mile higher than the highest peak in North America. The journey across the continent of North America has come to be almost a commonplace, and its consuming interest is diminished to some and increased to others by the simplicity and comfort attending it, while the great cities interspersed make it difficult to realize how very briefly the fertile plains and mountain defiles have been wrested from the red man and the desperado.

All is different in South America, although it possesses a white civilization more than a century older than that of New England or Virginia, and the distance across at the point where the first transcontinental road is being built, from Valparaiso to Buenos Ayres, is only a quarter of that between New York and San Francisco, or, in exact figures, eight hundred and eighty-eight miles. This Transandine Railroad will not be completed for five years, and perhaps longer. One tunnel, forty-five kilometres long, or ten miles longer than the great Simplon Tunnel in the Alps, remains yet to be built, with nine ventilating shafts, and only five kilometres of the work is finished. But it will be completed some day, and the optimistic management declares its hope to be that it will be finished in three years,

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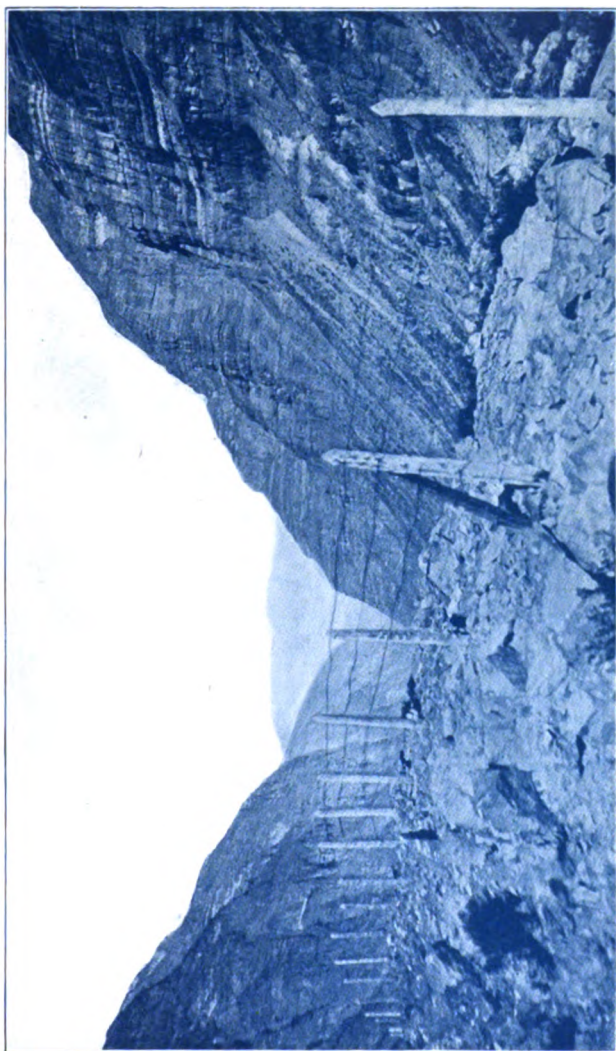
even though the obstacles are many and both confusing and confounding.

The journey from Valparaiso to Buenos Ayres at present is advertised to be one of forty hours, but if one accomplishes it in two days he will be doing the average or better, and even though he does not stop and rest at Mendoza, he will find it trying and wearisome, no matter how young and strong he is, not to lay too much stress upon dirt and danger, both in many forms, with bad food worse prepared, as the lesser evils of a trip that would be positively killing if it were less fascinating and not doubly worth doing. The fare is twelve pounds, and a pound is flat five dollars of our money in South America. There is an allowance of one hundred pounds of baggage. Two express companies, so called, which seem to be equally bad and unreliable, engage to move your baggage from your hotel in one terminus to a hotel at the other, and carry you and your hand parcels over the summit of the mountain pass, 12,796 feet above the sea, either in coach or on burro, or *mula*, or *macho*, as you may elect. We patronized the Compania Nacional Transportes Expreso Villalonga, commonly referred to as "Villalonga," as being the older company and consequently with more experience and a longer record in losing and breaking things. The new Compania Transportes Unidos is fast becoming as proficient in

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carelessness as the old one, and only needs a short time longer in which to graduate as an expert in slackness and general inefficiency. The excellent Transandine Railroad officials fully realize the intensely human shortcomings of these strange "expresos," and have about come to admit that the only remedy is the completion of the railroad and their extinction in present form, whereupon they will probably become bandits and train robbers, with operations more stealthy than at present, but the result much the same.

One who has much baggage should burn it, or store it, or ship it by steamer via the Straits of Magellan. We cached our trunks at Santiago and only carried a bundle of rugs, for the cold of the mountains, long, light dust coats for the flying sands of the pampas and the indescribable grime attending the mountain caravans, and a small satchel with night garments and toilet articles. By watching these fiercely and unremittingly, not from thieves, but from the Villalonga, and being ready to fight for them at every or any turn, we got them through safely enough. But we saw others who had much more to start with and landed with nothing. One man had two suit cases, both of which were swallowed by the mountains; one went over a precipice and the other was run over by something like ten coaches and was then trampled



FENCING A RAILROAD RIGHT-OF-WAY "ACCORDING TO LAW"
In the Heart of the Andes

upon by a cavalcade of pack mules, until scarce a shred of case or contents could be found. Another man we saw at Valparaiso who had just come over. He had started with trunks and bags, but landed in worse shape than a shipwrecked sailor with all he had on his back and that ground full of the grit of the Andes, which is worse than the dry, cork-like *loess* dust of the valley of the Hoangho in China. He told us he not only could not find his effects, but could get no satisfaction; the Villalonga people actually presuming to intimate that he was as much of a tramp as he looked and had never an outfit to start with.

These things are only the amusements of the journey, which may be guarded against by a temporary abatement of the vanity of dress and the leaving behind of every unnecessary article. Then, too, one can help the case wonderfully in the food line by carrying an ample lunch basket, with bottles of water and wine or beer. It is important to eat sparingly, but often, while ascending the divide, which will enable one to stand the altitude better and may save him from mountain sickness, which may be bad here, but not so dreadful as the awful *sorroche* or *puna* that attacks new mountaineers in Peru and Bolivia. Persons of very low vitality, or hearts that are organically weak, should not essay the Andes crossing, at least without consulting a physician.

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The transandine journey on the Atlantic side begins at Buenos Ayres, and the trains run as far as Mendoza daily, there connecting across the mountains three days in the week, so that one may either go through without stop-over at Mendoza by selecting a train that makes direct connection, or may go as far as Mendoza on an earlier train and spend a couple of very interesting days there. The ride between Buenos Ayres and Mendoza is half by day and half by night, the latter serving to cure a monotony that attacks most travellers. Dining and sleeping car accommodations on the through train to Mendoza, operated over the Buenos Ayres & Pacific and Argentine Great Western broad-gauge railways, are average and entirely bearable. The train has no suggestion of the palatial appointments of the transcontinental trains in the United States, but it is far from being bad in South America.

One soon gets into the plains country similar to our huge Western stretches in all but area, and toward night into the pampas proper, quite resembling the Arizona and New Mexico deserts traversed by the Southern Pacific. Wherever anything will grow without water one may see grain fields of wheat and corn, and in the wilder portions great *estanchios* or ranches like the old-time Western American ranch of the halcyon cow days of fenceless, limitless pasturage.

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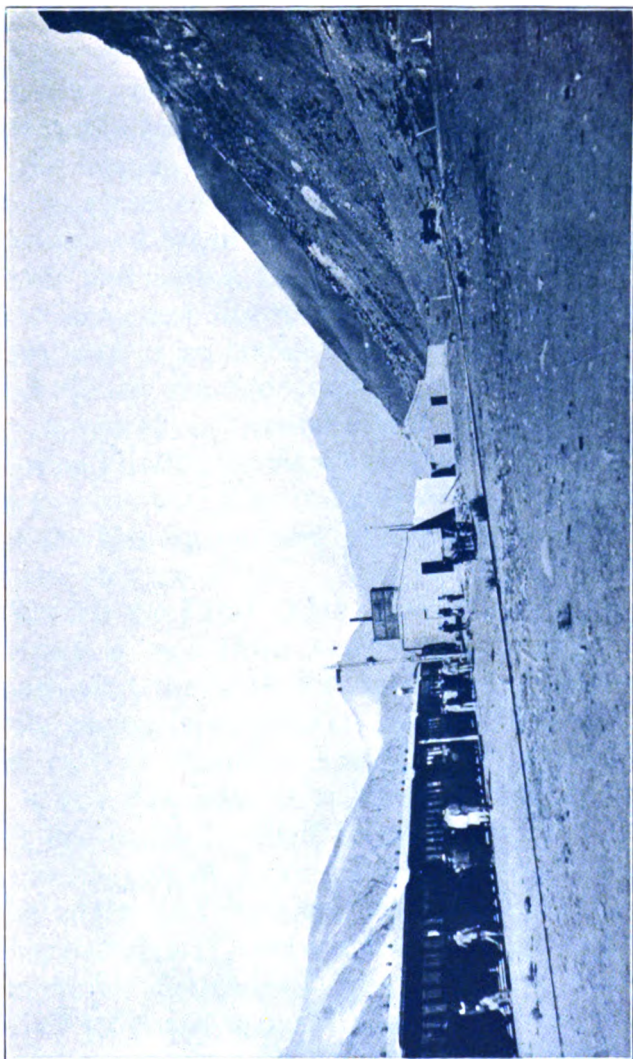
Even in the deserts one may see fine sights of tilth where water has been introduced. In the low places and along streams the sinuous and graceful pampa grass, ten to twenty feet high, waves its whitish-gray and grayish-yellow plumes in the breeze as if bidding defiance to drought and locusts, for this has been a terrible year in the Argentine, with rainless months and clouds of devastating insects that blacken the sun while passing over and blockade the railroad for hours if they chance to stay their flight upon it, as they often do. No matter how powerful the locomotive, or how much headway is used, or how much sand is sprinkled on the track, no train can run through a resting army of locusts six inches or more deep. The driving wheels crunch into them a little distance and then slip and whirl, and slip and whirl again in a way that is as impotent as it is sickening.

One sees no scampering herds of fleet and agile antelopes as in the earlier days of our West, and few birds; in fact, the impression is of a ride through a desert, not as desolate as the Sahara, to be sure, or as the Gobi in Mongolia, but still enough of a desert to make one think twice before settling down in its midst unless he had not seen it before and had burned all bridges behind. Do not get the idea that the Argentine is all desert, or by any means all garden, as the colonizing offices and agents would depict.

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There is good land and bad land, with more of the latter, and with no such proportion of the former as in our own Western country. I am of the opinion that Iowa has a greater producing and sustaining power than all of Argentina; add Illinois, and there remains no doubt whatever.

The journey across the Andes from the Pacific side may be undertaken from either Valparaiso or Santiago, with trains three times a week. The Valparaiso train leaves at 5.15 P. M., and runs to Los Andes. The Santiago train leaves at 6.15 P. M., and passengers catch the Valparaiso train at Llai Llai (pronounced Yi Yi, with long *i*) junction, to which they transfer across an adjoining platform at the same station and proceed to Los Andes, which is the end of the Chilean State Railway in that direction and the beginning of the Chilean Transandine Railway, upon which one continues in the morning after a night spent at Los Andes. The ride to Los Andes is through the beautiful and fertile valley of the Rio Aconcagua, one of the centres of heart and life in agricultural Chile, with fields of corn, wheat, cotton, tobacco, vines, orchards, herds, fowls, and pretentious haciendas, tile-roofed, and more lowly ranches, quite light and tropical in construction, and thatched with reeds and grass; all a picture to please the eye and gladden the heart. The further we rode away from the



A TRANSANDINE RAILROAD STATION

coast the more we noticed an improvement in the countenances of the people and in their general demeanor, and when the limits of the terrible earthquake zone were reached it could be told by the laughing eyes, happy faces, and smiling countenances of a people who are naturally light-hearted when their lives and families and friends and nerves have not been wrecked by some elemental disorder attacking them unawares, and at no certain time or place. It was good to see the independent carriage, elastic step, physical and mental vitality; also the fine crops and flocks, for these are some of the medicines which, with the nitrate fields and the mines and the Concepcion and Valdivia districts, are to cure stricken Chile.

We left the Hotel Oddo, Principal, Santiago, at 5.30 P. M., and drove over the rough rock pavement along the beautiful Alameda to the Alameda station in a hack, or coach, or wagon, or jerk cart, or whatever it is that one rides in if he is so unfortunate as to have to ride in Santiago, and which is called an "American," — evidence enough of lacking friendship for us, at least at the time the name was bestowed, and a thing that should have state attention in order to remove an aggressive, impertinent, and undeserved reflection upon all things American. It is a cross between a Cuban *volante* and a Quebec *caleche*, with all of the bad points of both and

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none of the good ones, to which is attached a pair of badly articulated skeletons of horses without even a whole skin to tighten their meatless bones, and driven by a Chileno who has never bathed or shaven, and who looks like a badly fed bandit, but who always gets you to your destination, perhaps after a most circuitous route, in order to impress you with the size of Santiago, or make a foundation for a charge, which is rarely too much and does not take into consideration whether the thing which I hesitate to call a vehicle is occupied by one person or ten. If the census of Santiago ever comprehends and includes the members of the animal kingdom, large and small, that inhabit or infest these thousands of so-called "Americans," that city will be the largest on the globe, far and away, in point of numbers, for a third-class jinrikisha in Kyoto or Shanghai, or the most lowly palanquin in Canton cannot compare.

We reached Los Andes at 10.30 P. M. There are two hotels, but we had chosen the Hotel Ingles and had telegraphed for a room, a most ordinary but wise precaution in a land where hotels are usually as bad as they are crowded and where the best is invariably reserved for those who wire. So we got a good room on the ground floor—all of the rooms, or nearly so, are on the ground floor at this hotel,—with clean linen and two candles, which we

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afterward learned were only allotted to the best room.

There we met Mrs. Luke, a good and kindly Cornish widow, the landlady, and her son and daughter, both born in Chile, and all of them as obliging and as polite as one could wish, and giving an impression of honesty and wholesomeness which I discovered to be very real. Just as soon as Mrs. Luke found we were Yankees she asked me if I knew a Yankee named Henry Smith in the United States. Meeting her simplicity half way I told her of a friend of that name in Adrian, Michigan.

"Well," she said, "he was here in Los Andes and lived with us. He smiled so nicely and told funny stories and said he was a great man and had been in parliament and would some day be president. Then he made love to my daughter and borrowed four hundred dollars from us, and we have n't seen him since."

I assured her that my friend could not be the man; that he might be guilty of all but the four hundred, and urged her to be suspicious of all Americans in South America permanently as having something the matter with either their character or their judgment.

After all this it was past midnight before we got to bed, and as the train was to leave early the next morning we were to have not more than four hours' sleep, if we slept every available

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moment, which inspires the suggestion that it would be a good idea to take an earlier train to Los Andes, or one the day before, so as to get a good full night's rest and be in the best possible fettle for the hard day's work.

The call came at 4 A. M., just as we seemed to have gotten asleep. A hasty bath, not in a tub, mind you, and a breakfast, or *desayuno*, of good bread and butter and black coffee and hot milk, reinforced by a couple of very fresh eggs especially ordered the night before, put us in good trim and opened our eyes for the wonders of the day as well as the dust.

We left Mrs. Luke's good Hotel Ingles at 4.45 A. M. for the Transandine station, after ordering a room for our return and leaving a few *pesos* extra on Henry Smith's account. The train was due to leave at 5.15 A. M., but when we reached the station it was still very dark and a crowd had gathered, but the station doors were not open yet and there was no train ready. It seems that the natives always gather on time under the delusion that some day or other the train will start on time and they will be left, and strangers do not know any better at first. We heard of many travellers who had found no room or bed for the night. About six o'clock, as the light beams were sliding down the mountain slopes reflected in a purple hue that looked damp from a mist that was not yet ripened into

CROSSING THE ANDES 13

a fog, but was a miasma of the night, a man came along unconcernedly and unlocked the station door. Soon after, a few foreigners, who had learned the curves of the country, came along, too. Then the narrow-gauge train backed down, filled up, and we were away for the Andes, at whose feet and in whose shadows we had slept a little while.

There were five cars and a Borsig rack-and-pinion or cog-wheel locomotive, made in Berlin. The machine looked as though it were done up in an oblong rectangular black box with a green stripe around the edge where the lid fitted on. But we learned to respect it amply, if it was made in Germany, the land of many cheap things and some good ones.

We were climbing up the valley of the Aconcagua. When the grade was over four per cent the cog appliance would be used and we would ascend tooth by tooth at a speed from two to ten miles an hour. With a lower gradient we would run as freely, if not as fast, as an ordinary engine. On one side-track, attached to a work train, I saw a Shea cog-wheel engine, an American machine, which looks more clumsy than the Borsig, but is said to be more powerful. It is used in the United States, particularly upon logging railroads in hilly regions, and is a good and serviceable machine for the purpose for which it is designed.

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Los Andes is at an elevation of eight hundred metres and is quite in the mountains, reminding one in location of San Bernardino more than Pasadena or Los Angeles. It is farther from the sea than these California cities. The plains or wide valleys used by the Aconcagua are wider between the mountains and the sea than southern California, comparing rather with the Sacramento region. However, the mean width of California from the mountains to the sea is greater than that of Chile. Geographically, the two countries present many similarities, and in climate, also, they are not unlike, excepting that southernmost Chile is almost an Antarctic region and northern Chile is rainless and hot.

We were due at Juncal (pronounced Hoonkal, with accent on the last syllable), which means marsh or canebrake in the dictionary, but not in the Andes, at 8.15 A. M. Juncal is 2222 metres high and is the present terminus of the railroad on the Pacific side. We had travelled fifty-two kilometres and climbed 1400 metres in about two hours. At Juncal there was a wild scramble for coaches and mules. Both express companies have complete outfits in waiting. We hurried into a Villalonga wagon and got away at 8.30. The summit, or *cumbre*, was reached at noon, and the wild flight down to Las Cuevas on the Atlantic side, where the train for Mendoza awaited, began at once. We were due at Las

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. Cuevas at 1.45 P. M., and due to leave at 2.30 P. M. Our arrival was somewhat in advance of the schedule and we departed on time. At Las Cuevas a bad dinner worse served was to be had, the first food offered *en route*, by which statement the importance of carrying a lunch is made evident. The train was due at Mendoza at 9 P. M., and arrived on time. Supper was served on the train, at a reasonable price for an eatable repast. Those going directly through to Buenos Ayres transferred to an awaiting train at Mendoza, which pulled out on time at 10 P. M., with coaches and sleeping cars full, all due in Buenos Ayres at 6.50 the next evening. Here is the time-table for the Andes trip in April, 1907, from the Pacific side:

Trains depart Mondays, Wednesdays, and Fridays.

Leave Valparaiso, 5.15 P. M.

Leave Santiago, 6.15 P. M.

Arrive Llai Llai (both trains), 8 P. M.

Arrive Los Andes, 10.10 P. M. Remain all night.

Leave Los Andes, 5.15 A. M., Tuesdays, Thursdays, and Saturdays.

Arrive Juncal, 8.15 A. M. End of railroad, Pacific side.

Leave Juncal, 8.45 A. M., by coach or mule.

Arrive Cumbre about 12.15 P. M. Summit of Pass.

Arrive Las Cuevas, 1.15 (Chilean time), 1.45 (Argentina time); terminus of railroad on Atlantic side.

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Leave Las Cuevas, 2.30 P. M.

Arrive Mendoza, 9.00 P. M.; change cars.

Leave Mendoza, 10.00 P. M.

Arrive Buenos Ayres, 6.50 P. M., Wednesdays,
Fridays, and Sundays.

The reverse of the above may be taken as the order from Buenos Ayres to Valparaiso, with the exception that the trains leave Buenos Ayres in the morning and arrive at Mendoza early the next morning.

It is bewildering to think of describing the trip over the Andes, and to compose a word picture of these huge vertebræ of a continent is impossible. The mind, with all the assistance the eye can give, can neither comprehend nor digest the grandeur any more than one can mentally assimilate Niagara Falls at first sight, or even after many visits, and the Andes are still more tremendous and overpowering to the intelligence. To see as much and feel as much of them as is humanly possible, one needs a ripeness of soul, as well as a richness of intellect, and no two persons can view the Andes alike, and no one person can see much of them by reason of both mental and ocular limitations. If one could have the heart and soul of the fountain-head of art and poetry, and the eyes and wings of a condor, he would be able to see more of the Andes, but even then he could not describe them with pen or brush so that his brother could

see them and feel them in all their majesty and sublimity. One may look and feast and draw long breaths of the fine mountain air, yet find no sympathy in himself or in anything around him more than that "the heavens declare the glory of God and the firmament showeth His handiwork."

The ordinary mortal cannot even differentiate and classify and name the colors that flash athwart the great brunt breasts of the huge hills or rest demurely in neutral unobtrusiveness on some canyon wall, where lichen and stone are mates and naught else lives. No prism or palette ever presented such a gathering of hues and tints, so numerous and so graduating into each other as to make one wish he might be the master artist of the world and blend and mix half so well. Where the granite is king and fat with feldspar the delicacy of the pinkish flesh colors are indescribable. Next the hornblende will predominate and the pink gives way to a gloomy blackness whose sombre color is emphasized by association. Then may come a big patch of rock red as blood and angry with oxide of iron married to a verd-antique or some other royal green copper stain with bands that no manner of man, not even the tunnel builder, will ever put asunder. Across yonder *quebrada* is a sea of yellow where an ochre monarch is king of the mountain hues, and on beyond a

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diorite or a diabase or a basalt with tints so delicately intermingled as to both confuse and delight the eye. Close by a lime rock will supply an effect of Quaker simplicity and even goodness, and on a little further a granite gneiss shows its fine laminations. There are slates of many colors and coarse sandstones and marble and porphyry.

When sunlight and shadow play upon these rock schemes the senses are gladdened and dazzled by the contrasts, and there is such a banquet of color as may be seen nowhere else, no, not even in the Yosemite or Yellowstone or Grand Cañon or the Alpine Dolomites. During this feast one is too much engaged to miss the fine mountain verdure to be had in the White Mountains and in the Alps, which is pleasant, but prevents a riot of tints, bronze and bright and beautiful, so wonderful in the Andes.

The Rio Aconcagua narrows rapidly after leaving Los Andes, and at Puente de las Viscachas, a bridge named for a little mountain animal resembling a rabbit, ten kilometres from there, it pours through a confined channel, each drop acting as if in a wild death struggle to beat the others to the sea. At twenty kilometres from Los Andes is Resguardo, a small station where *guardia civil* are in evidence and really look like business. These guards are necessary in the mountains, and especially since the earthquake

which, for some reason not easily found, drove desperate men to the fastnesses, and there has been at least one attack upon a lonely mountain settlement. Here the Rio Colorado, a merry mountain stream which threads the hills in a gulch-like channel, comes into the Aconcagua. It looks like an ideal trout stream, but has no such inhabitants. Chile has been offered assistance in fish cultivation by the United States, but has not yet followed the example of enterprising Argentina in accepting it.

On a little beyond Resguardo is Los Loros, with a few people, but whether they are supposed to resemble or suggest parrots, as the name indicates, is an unimportant problem that is lost in feeble conjecture. The altitude at Los Loros is 1162 metres, making an ascent of nearly 1250 metres, or about 3900 feet in twenty-three kilometres, or about fifteen miles. The next point of especial interest is thirty kilometres from Los Andes, where the little Riocillos joins currents and roars in tinier voice with the Aconcagua, as their waters surge through a wild gorge called Salto del Soldado — “The Soldiers’ Leap,” — another hundred metres above Los Loros, which has made the sturdy little Borsig puff and snort and dig in its hooks.

The railroad, by tunnel and hanging on to mountain walls, spider-like, passes over so near that one may look down into the cauldron where

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a love-lorn soldier is said to have leapt after his Dulcinea had been forced by her parents to marry a rich and fat and greasy old rival.

Another story is that a Chileno soldier in the wars of independence, being closely pursued by several Spanish soldiers, jumped to quick death to escape his enemies and the death by torture that would be certain to follow. The cleft in the mountains is remarkable and might only have been made by the cooling and contraction of the molten rocks in those first mysterious days when the stars sang together, or by a most awful earthquake.

Soon afterwards we came to Rio Blanco station, where a river of that name, suggested by its bosom of immaculate foam, runs into the Aconcagua. At forty-two kilometres is Guardia Vieja, "The Old Guard," 1610 metres above the sea, formerly a guard station on the Antiguo Camino, or ancient road, that has been in use here over the Andes for more than two centuries. From here to Juncal, the present terminus of the Chilean Transandine Railroad, is only twelve kilometres, in which the ascent is up to 2222 metres, or a climb of 2000 feet in eight miles, which the Borsig engine negotiated with much deliberation but no uncertainty.

We had been on the way from Los Andes only a little over two hours, during which time the train had run fifty-four kilometres, and had

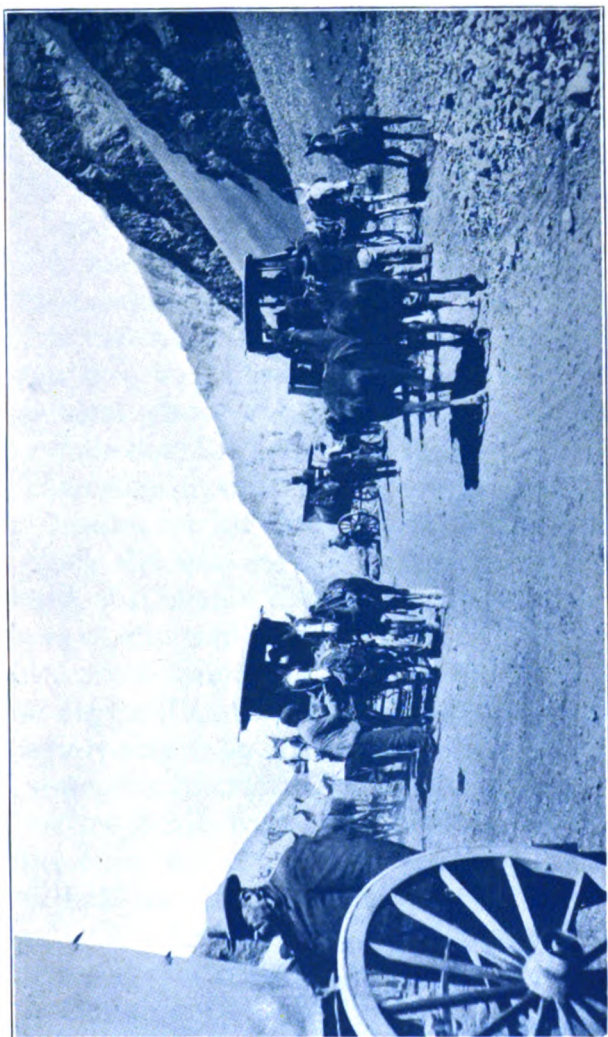
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climbed from 800 metres above the sea to 2222 metres.

Everybody tumbles out of the train and makes as much of a rush for the mountain wagons as the somewhat rarer air of this altitude will permit. Not much difference in breathing is noticeable here unless one is peculiarly susceptible, but it is to be observed that most persons move a little more carefully and breathe a little more frequently. There seems to be an army gathered to receive the train, and in truth there is nothing less, for everything animate and inanimate, persons, baggage, parcels, mails, and some freight, must be carried over the divide, and that quickly. There are mail and freight wagons, nearly a hundred mountain wagons or coaches, — peculiar to this one place in all the world, — for carrying passengers, hundreds of mules and burros and horses for riding and packing. Lumber and bedsteads, bureaus and tables, trunks and bags, are cinched on to the mules and burros, and off they go in no time following a lead mule wearing a bell and maybe a red bonnet or bright decoration of some kind to distinguish it. Where the road is at all a road these patient beasts of burden are urged into an ambling trot and are hidden in a cloud of dust like a camel train in the desert. Where they cut 'cross lots they resemble a column of ants on the brown mountain side, creeping up cliffs and crawling past dizzy

precipices in all sorts of places that look impossible and would be to anything else. These are the freight animals, and they take the shortest possible trail over the divide, no matter how steep or how narrow it is. The mail and light baggage are rapidly loaded into wagons of special and smart design, not unlike those of medium size used by the express companies in the United States. They are drawn by good horses and make a brave showing of rearing steeds and cracking whips as their rival drivers proudly start on the race over the mountains, for a race it is, and as madly exciting as can be seen in the world. The excitement gets into the blood of all the drivers of whatsoever the vehicle, amounting to a kind of intoxication that transforms a man who may be normally sane into a daredevil and a hair-brained idiot, of course affecting these people of Latin and Indian blood more than it would any other race, excepting the wildest of Irishmen.

But we have more to do with the passenger wagons and the riding animals. If one is going to make the trip both ways, and is strong, he will enjoy a mule either over or back. Most of the mules are fat and sleek and small and well caparisoned. Unless one is an extraordinary connoisseur of mules in the flesh, it would be much better for him to take the selection of the master of the mules than to trust his own



CHANGING POST HORSES WHILE CROSSING THE ANDES

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judgment. I saw one fine-looking young German accoutred like a buck take a pleasant-faced mule and start away. He had asked no questions but had taken the most likely looking animal. I saw that German several times afterward, and when I saw him last we were not yet near the top. He was walking, *sans* hat, with a most dejected mien, and all his military bearing and world-conquering air had gone with the mule, which had bucked and rolled and kicked and bitten in a way to give almost anybody a few new ideas about the character and versatility of a mule that has been born to be damned.

This mule business is important because no extra mules are led along to supply Germans or anybody else who may be unmuled, a bad fate, indeed, if it should happen far from either terminus of the trail over the pass. Most of the mules are rideable and bidable, the latter to a high degree if you do not try to make use of it. The only way to do is to mount and hold on and let the animal have its head, for it knows more about mountain trails than you do. When it walks upon the very dizzy edge of a precipice with half its uncloven hoof actually over the edge, as it will every time, just shut your eyes or keep them open, as you choose, but don't by hand or mouth, or even breath, undertake to steer the animal or argue with it. Many a man and many a mule have gone down a perpendicular

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mountain side to death because the man thought he knew more than the mule and sought to demonstrate it at a critical moment. If you take a mule you will have many a start and many a fit of nervousness, for if you did not you would be a mule yourself. Never mind your nervousness. It will be a thing to remember and will not communicate itself to the mule, which is immune to nearly everything, including reason. On mule-back the ride over the crest of the Andes is colder and grimier and more wearisome, but you will see some things and have some experiences that do not come to him who rides over in a wagon, just as the wagon has features of its own, too. So, if you are brave and able and willing and have the chance, go one way by wagon and the other by mule.

But we have most to do with the wagons, which are called *coches*, and at first one thinks this an unlicensed application of courtesy, but before one has done with the uncomfortable vehicle he is willing to take off his hat to it and bestow praise without stint. This wagon of the Andes is unique as to design. Picture a democrat wagon of the rural midcountry of the United States, cut it in two in the middle, attach wheels twice or three times as heavy as those on an average democrat wagon and so large in diameter as to lift the axles nearly a foot higher from the ground; on this frame erect stiff steel

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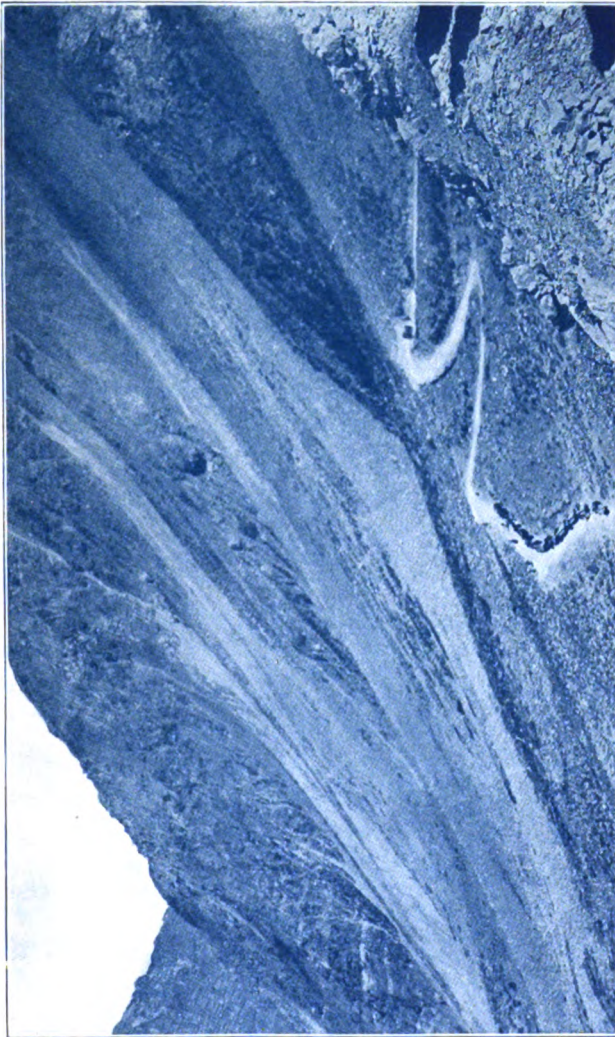
springs crosswise, then put on a box with parallel seats into which four persons may be packed if knees are loosely hinged and carefully adjusted so that two on one seat face the other two with limbs dovetailing; over all this erect an unpainted canvas cover, tight at the top and front, with loose sides that may be rolled up; an entrance at the rear through an end gate or door a foot high and fastened with a handled bolt, driver on a cross seat in front of the canopy and separated from the passengers by a canvas curtain which may be rolled up, and you have the transandine stage, which may be said to be a hack and a half high and half a hack long. This vehicle is drawn by four horses hitched abreast in Roman chariot style, with a fifth horse bestrode by a boy to help out in the steepest places, and driven by a mountaineer who has no sense of danger and apparently no skill or judgment, which he only proves to the contrary by getting his load over the mountains with whole hide and no bones broken. In choosing an outfit you have no time to spare, because it is important to get away first, or as nearly first as possible, in order not to have to eat the dust of a great advance procession. The nearest wagon usually looks best, unless the horses are especially worn-looking and the driver stupid.

If the front seat is not piled full of parcels, for which there is no room in the part assigned to

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passengers, it is a good place to ride, because you can see more, and with greater ease and less neck-stretching, and you have a chance to jump if the wagon breaks or starts over a precipice, an act absolutely impossible to the four inmates wedged into the covered seats behind the driver. No great mogul in the palmiest days of Bokhara, or Timur-Leng himself, ever saw such a caravan, — mules, horses, donkeys, passenger coaches, mail and baggage wagons, freight teams, commanders, travellers on hoof and on foot, helpers, all doing things quickly and with no evident system except in results. Before a half-mile has been traversed, the road is a foot deep with ground stone and dust, which gets in your eyes and mouth and intrudes everywhere, unlike anything, unless it be in Central China, or a dust storm in Peking or a simoon, which is more hot wind than sand and what sand there is, is clean.

But one soon ceases to think of the dust cloud and has his attention drawn to the road, the scenery, the driver, his driving, and the team and wagon and the people about him who are affected by the altitude, not to mention the cold. We had been over many passes, including the great Stelvio Pass in the Alps where a corkscrew road climbs nine thousand feet and where you invariably encounter a snow storm, even in July and August, and so we thought ourselves fortified in advance with knowledge for the trip.



CARAVAN GOING UP THE ANDES

Vain thought. The Stelvio road maintained by Austria and Italy is wide and well kept and walled at all very dangerous places. Then its turns and corners are ample and the whole a product of sane engineering and competent endeavor. Not so with this Andean road. It is narrow and rocky and rutty and steep, with no walls to speak of except tumble-down ones that increase the danger by their false suggestion of safety, and in one place the wagon would fall two thousand feet if it should roll off the edge of the mountain. Then the road has no graceful sweeps or round easy curves as it takes its way up the Titanic heights, but, rather, it zigzags like the teeth of a saw, ascending in short stretches and doubling back at sharply acute angles, leaving very little room for a team and wagon to turn in when driven slowly and carefully and two abreast. Now imagine, if you can, the horses driven madly in a gallop, no trot; that would be slow; but in quick, short, jerky jumps such as the mustang-like animals would make under the saddle when pressed.

The short, high coach follows the cavorting horses, jerking, careening, and springing like a small boat sailing into a wildly choppy sea.

You perceive that the wheels are strong and the springs, too, and the whole rig evidently intended for chariot-racing. The driver groans, yells, whistles shrilly, cracks his thick rawhide

whip, lashes his horses, and does everything he knows that will inspire fear and induce speed. All this you become accustomed to in a measure, so capable is the human machine of rapid adjustment. The mountains about you come closer and closer; glaciers stretch down to the roadway and you wheel over ice and snow; the foaming, plunging horses are swiftly changed at a station maintained for the purpose; you take a picture and snatch a few bites from the friendly lunch basket, for the air is either making you ill or whetting your appetite, you may be sure, and on you dash up the narrow road dug into and blown out of the rocky ribs of the giant mountains. The air grows colder and rarer; a passenger just ahead of you faints and falls out of the wagon from mountain sickness, and although you may have been on Pike's Peak, up the Rigi, or climbed Piz Julier, still you are made nervous as well as sorry by the sight, and wonder whether you will be seized with weakness, for the air in the Andes has peculiarities of its own and is no respecter of persons or precedents. The caravan halts, none can pass on the narrow way, it congests on the road, horses prance and drivers swear even if the frightened, weeping wife is getting her husband back into the coach as fast as kind and loving hands can do it, for the train waits on the other side and the rival companies wish to land their passengers first, or at least with

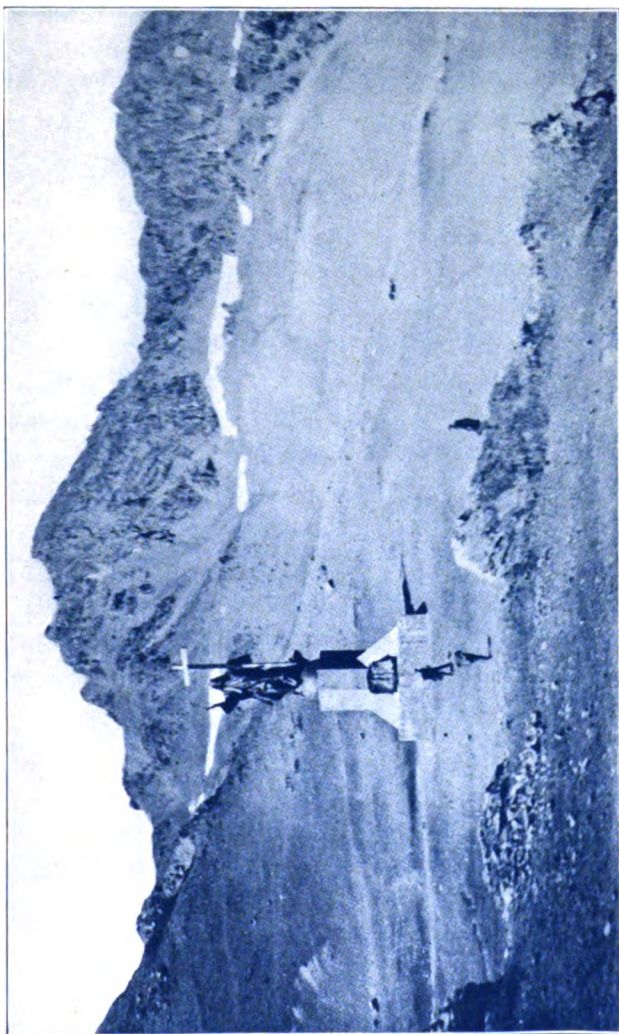
equal despatch. On we go, with the sick man's head in his devoted wife's lap, and his body a crumpled, prostrate, limp mass, — he may only have a fit of temporary weakness, or may have a bad heart just fluttering its last, and which no one can tell until we arrive down on the hinter side of the pass.

We are climbing from Juncal, 2222 metres, to the Cumbre, or summit, 3900 metres, and as straight and steep as mountain horses can draw us. At 3100 metres, over 10,000 feet, a sight fascinates the eye and impresses itself upon the mind forever. It is the Lago del Inca, the "Lake of the Incas," 4000 feet higher than those emerald gems in the Swiss Engadine that lie at the feet of Sils Marie and St. Moritz; opalescent, translucent, pure as crystal and clear as the unclouded mountain sky. Resting so peacefully in such a harsh setting, it suggests that the mad gods who forged the eternal hills were tranquil for at least a moment. On, up and up, beating the record of Excelsior, our horses near ready to drop with fatigue, and many times seeming to be on the verge of stumbling over the precipice to destruction, we come to a narrow stretch of almost level rock, with a slight hog-back, and on the right hand we see a statue of the Saviour of the world as the Prince of Peace. "Christo Redentor," Christ the Redeemer, is the inscription. We then know we are at the apex

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of the Andes. A tiny rivulet that trickles from a field of perpetual ice quickly becomes the Rio Mendoza and runs to the Atlantic. This is the boundary line of Chile and Argentina, and the figure of Christ commemorates the pact of peace and arbitration between the two countries. It is impressive, indeed, surrounded by fields of eternal snow and the mightiest peaks of the western world, guarded by the great condor which may be seen soaring so high above the ice-girt pinnacles that the eye can barely discern it.

The huge bird at this dizzy height looks no larger than a swallow. At another point in the Andes, and at another time, I saw from an elevation of 16,000 feet five condors sailing so high in the air that they could only be recognized by a clear and powerful field glass. They were far above peaks of 21,000 feet and must have been quite five miles above the sea level. Yet so remarkable are they in both breathing power and flight that in the rarefied air of that great altitude they sailed and poised and circled with almost never a flap of the wing. What wonderful birds they are and what weird stories are told of them! The mountain natives hold them in superstitious awe and cannot be induced to rob their nests or attempt their capture, which in a measure accounts for the few living specimens to be seen in the big zoölogical gardens and aviaries of the earth.



CRISTO REDENTOR — THE PRINCE OF PEACE
In the Andes at Cumbre

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One tribe of Andes Indians has built around the condor a cosmic legend to the effect that the earth was once so small that a condor living in the sun flew away with it and deposited it like a huge egg on the bosom of the sea in a great nest of floating feathers. The guardian bird fought off the monsters of the deep which would have devoured the earth, until such time as the feathery nest entangled many things of the ocean and appropriated them to the earth, resulting in a growth to the present size. The condor still keeps its vigil, and to kill it would be to destroy a guardian of the earth, inviting disaster. Whenever a cataclysm occurs they attribute it to the death of a condor, somewhere over the earth, at the hands of a man.

Another tribe believes that the souls of the damned enter the body of the condor and are so poised between heaven and earth as to see the glories of both and possess neither. Thus they live on in the agony of Tantalus forever.

The condor has been seen as far north as eight degrees above the equator, but the instances are rare. Its realm is the Southern Hemisphere in South America, and its range south takes it to the Straits of Magellan. In the Winter they may be found near the coast, many roosting in a single tree, but in the Summer they retire to the highest Andean peaks, where their young are reared. The great bird makes no nest, but lays two eggs

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a year, in November or December, which corresponds to midsummer in the Northern Hemisphere. The eggs are deposited in a rocky cleft or cavern and in a region little frequented by any form of animal life that might bring danger to them. A young condor is too big for its wings the first year and cannot fly until its second year, so it clings to the parent bird, hunts on foot, hides when the mother bird is absent, and is generally helpless.

Andean natives have two methods of capturing the condor. One is to bait it with a carcass which is placed in an enclosure formed by palisades with only one entrance large enough for the bird. The trappers lie concealed awaiting with clubs and lassoes the coming of their quarry. Once in the enclosure, and the condor is not over wary, it eats with carnivorous fury and gorges so much that, impeded by the palisades, it cannot gain flight. In this plight it is lassoed, while with clubs the men beat off its assaults until it is fastened.

The condor is a deep sleeper, like all things Gargantuan, and it is sometimes lassoed while on the roost at night. A number of South American nations recognize it officially in some way as we do the eagle, just as the ancient South Americans named some of their clans for it. In Chile the condor has an emblematic place on the national shield and on coins. In Ecuador the

ten-sucre gold piece is called a condor. It is worth \$4.86, or the same as an English pound.

All Andeans contend that the scratch of a condor from beak or claw is as fatal as the bite of a copperhead or a Gila monster, and that its flesh is also a rank poison. This is probably false and grows out of the assumption on the part of many that the condor is a carrion bird, which is not the case. It likes to kill its prey, and really prefers live, fresh meat, and has been known to carry off pigs and sheep, and even children, while it not infrequently will attack a grown man, and is said to have killed unarmed men. It does not prefer carrion and is only a scavenger when pressed by hunger. The carcasses of pack animals killed in the mountains are seldom touched by the condor, if other prey is at hand, and the two huge condors at the Quinta Normal, in Santiago de Chile, will often refuse their meals of meat if the bait is at all tainted. These specimens at the Santiago Quinta Normal are fine ones, even if one has unhappily lost a leg in capture. They measure over eighteen feet from tip to tip of wings, over six feet from beak to tail, and the body is heavy in proportion. The color is a russet brown. The beak and mandibles are formidable, and one great toe seems to be ossified in the manner of the foot of an ostrich.

But let us close our eyes on this gigantic demon bird and its silent fierceness, and take our way

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down the Atlantic slope of the Andes with the wild coach driver who really seems to have something of the condor in his heart. No stop is made at the Cumbre or summit. We dash on only to pass the verge of the table rock and see Las Cuevas, "the caves," to which point the railroad has climbed on the Argentina side, between two thousand and three thousand feet directly below us. Our flight down to Las Cuevas cannot be described. Do you remember as a child the make-believe Roman chariot-races in Barnum's circus? How narrow and rough the track outside the circus ring was? How short the turns were? How the chariots sprang from corrugation to corrugation, rolled, tumbled, jolted, and caromed? How really there were accidents even in this circus contest? If you have this picture in your mind as drawn by the intellect of a child with no discount or dampening of maturity, then you can have some idea of the ride from the Cumbre down to Las Cuevas. Just add to it a narrower and rougher track than the circus course, very steep, shorter turns, a coach twice as high and more as the low chariots, and precipices on the side opposite to the mountain totally unguarded and the road always sloping toward this precipice, to go over which would mean down, down, down, until only fragments would find lodgment before they fell two thousand feet into Las Cuevas.

The plunging quadriga would nearly fall in a heap at every turn, and more than once the horse next the precipice would be over the side, only to be drawn back by the other three to which it was especially tethered. Round and round these zigzag turns we flew, seeing bones of hapless beasts that had been killed on the downward flight. Those who had mountain sickness were happily almost oblivious to our stormy progress.

Finally we landed at Las Cuevas, and as we did so one of our horses fell in his tracks and the others were wellnigh dead, too. Strong men were faint and weary, and such women as were on their way across were practically in a state of collapse. There were two children and they were in a pitiful condition. Wabbly-kneed and veneered with grime, everybody eats what he can of a bad meal, braces up in other ways, and then gets the best place remaining in the crowded train that will take him to Mendoza. Once in the car a reaction comes to all. Mind and muscle and nerve have been tense during the trip over the summit. Now there is relaxation, and so much that many are ill and all are weak, only to become strong with rest and sleep and richer air lower down.

The railroad is good and the cars new and as comfortable as crowded narrow-gauge cars can be. There are no parlor or observation cars on the Transandine Express. Just why is not apparent

as they would be well patronized and would add much to the comfort and pleasure of the trip. The Buenos Ayres & Pacific boasts a tangent one hundred and seventy-five miles long — the longest in the world — and only one curve, which is a reverse curve, in two hundred and six miles. The mountain division, which is really the Transandine operated under a lease, makes up in twists and turns for the long “straight” over the pampas. Following closely the valley of the Rio Mendoza, every turn of the river means a deflection of the track. The rails are heavy and well tied and the curves seem to be finely laid and perfectly compounded, with accurate and well maintained gauge and alignment. Otherwise the rush of the train down from Las Cuevas to Mendoza would be a drop to death, for it may be said almost to fall down, only guided by the rails which the wheels touch apparently in few places. It is a fit sequel to the ride over the mountains. No train over the Siskiyou or Selkirks or over Hagerman Pass drops down faster unless it is running away.

I have ridden over the mountain divisions of the Canadian Pacific, Southern Pacific, Denver & Rio Grande, Great Northern, and Northern Pacific in the cab of the locomotive where trained engineers drive their machines with rare skill and bravery, but I have never seen more daring running than that displayed by the little narrow-

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gauge Transandine Express down the toboggan slide from Las Cuevas to Mendoza. Much of the time I sat out on the platform, now watching the whizzing wheels and dancing trucks and at other times drinking in the beauties of the Andes.

No valley in the world illustrates the marvels of nature more than the Mendoza. Around Las Cuevas the river is fringed for miles with snow-capped mountains. The passes are dangerous in Winter and the Transandine trip may only be made in safety from November until May. It was April and late when we crossed and re-crossed, and the snow and ice stole into the trails in a suggestively threatening way, but the weather was really finer than usual. The beautiful Silver Range was a charming stretch of crystalline glory, while Tupungato and Aconcagua were especially impressive as, kissed by the clouds and crowned with ice and snow, their peaks seemed to cleave the very blue of the heavens.

For many miles the Rio Mendoza occupies an ancient valley into which it has worn such a chasm that a short distance from the brink one would not suspect the existence of a river. No channelling machine devised and operated by man could cut straighter or more regular walls. At Puente del Inca the river has torn through the rocks, leaving a perfect natural bridge more wonderful than the Natural Bridge of Virginia.

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Over this you may go to the Hotel del Inca, a health resort at an altitude of 2780 metres, with good water and offering much to those whose minds and bodies are weary and ill. All the way we have been following the Antiguo Camino, the ancient mountain road by which General San Martin made his famous march in 1818 from Argentina to the relief and assistance of Chile in the long war of independence from Spain. General San Martin vies with Bolivar as a South American hero and liberator. His march over the Andes with five thousand infantry and one thousand six hundred cavalry, through a country destitute of food for man or beast, over bad trails and up steep defiles, deserves a high place in the annals of the world's military achievements, for the results were more successful than those of either Hannibal or Napoleon. The old road is still used by pack trains.

Near the Puente del Inca the Rio Horcones joins the Mendoza. Between there and Puente de Vacas the traveller may see Los Penitentes, "The Penitents," an unusual mountain so serrated and pinnacled as to resemble a concourse of giants kneeling at a throne in the attitude of seeking mercy. Near here the rivers Tupungato and De los Vacas debouch into the Mendoza. Then comes the Yellow Cañon through which flows the Zanjon Amarillo. Many



PUENTE DEL INCA

Natural Bridge over the Rio Mendoza in the Andes. Altitude, 10,000 feet

CROSSING THE ANDES 39

tunnels intervene and the mountains are compressive.

At one place we saw a mountain woman washing clothes in an iron wheelbarrow, proving her quick adoption of the new conditions that have come to the Andes with the railroad.

On sped the train with brief stops at small mountain stations, past El Cateton and La Jaula, the latter "The Cage." At the Rio Blanca we saw a cold geyser throwing water a hundred feet high in sufficient volume to make a big creek. This fine water from some subterranean reservoir has been shooting out for three centuries as known by man, and no one may even guess how much longer. It is thirty-five kilometres from Mendoza and will not be permitted to go to waste much longer, for pipes are being laid to convey it to that city. We are approaching Mendoza. Ranches and vineyards begin to prove that the limits of the mountains are passing. Stations are more frequent, including Uspallata, La Invernada, San Ignacio, Cocheuta, Blanco Encalada, and then Mendoza, just as the sable garments of the night are enshrouding the earth.

The home instinct in the people of Mendoza is stronger, it would seem, than the supposedly dominant thought of self-preservation. Like the brave peoples who still cling to the Vesuvian towns, to Galveston, Valparaiso, San Francisco, the region so frequently inundated by the

Hoangho, and the "cabbage patches" in all of the cities of the world, situated where great rivers flow and distress their banks, in all of which history has punctuated itself with cataclysms and death, the people of Mendoza are not to be frightened away like so many rats just because the earth has the ague.

On March 20, 1861, Mendoza was the scene of one of the world's most awful catastrophes, comparing in horror and destruction of life with the very worst. There is no sufficient account of the disaster which goes into detail, because there were few left to tell the tale and because, too, pioneers are making, not writing, history. It occurred on a local feast day morning. The soft light of the new-born day was hazily reflected from the gaunt sides of the distant Andes. Early worship had called the people forth, and the big cathedral, whose adobe walls were twelve feet thick, and which was the pride, not only of the city, but of the province and all Argentina, was filled. Out of a clear and kindly looking sky, without premonition of any kind, there came a roar and rush of air, bearing onward a cyclonic water-spout. At the same moment the earth reared and plunged and rolled and billowed like a storm-swept sea. Nothing could withstand such a Titanic agitation. The dense walls of the cathedral crumbled and the pieces rolled like marbles. No support left,

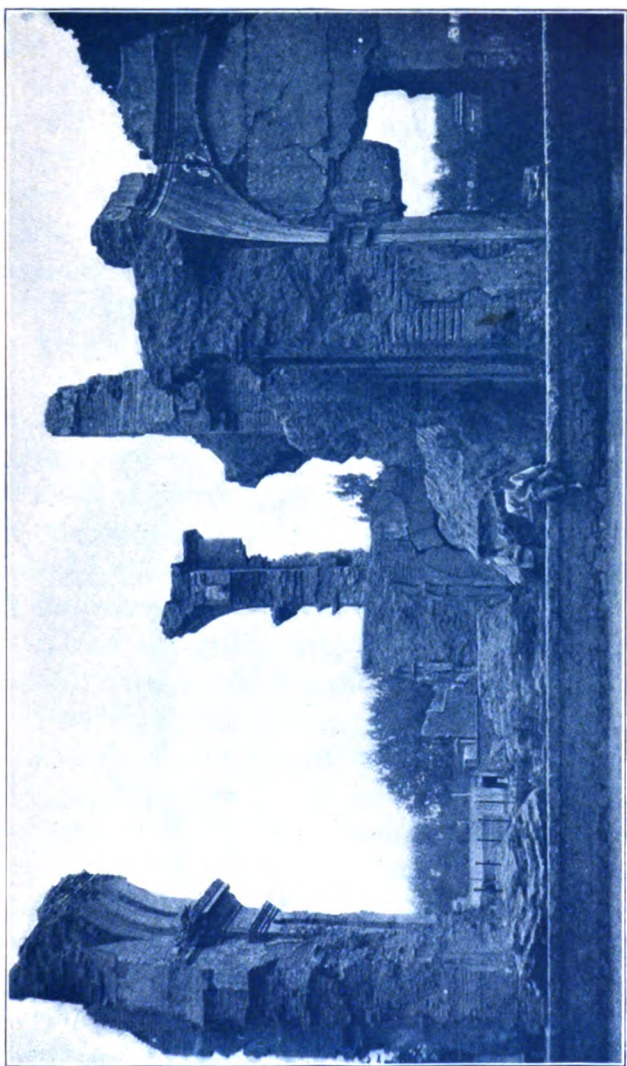
the great tiled roof fell in with a thunderous sound that rivalled the very earth noises that filled the air. Men and women, children and babes, were caught in the awful dead fall of roof and walls and not one escaped. So it was throughout the town. Not a building withstood the shock. Only a few persons who were in the fields or were going to an early cock-fight escaped. The loss of life is given at from 10,000 to 25,000, the number best authenticated and most commonly accepted as correct being 14,000. The ruins of old Mendoza still remain as the most gruesome spectacle of earthquake destruction to be seen to-day on the face of the earth. One should not fail to visit the ruins, any more than he would go to Naples and not go to Herculaneum. Remnants of the cathedral walls, as thick as a fortress, on end and on edge, sidewise and flat, some pieces far from their original position, may be seen. On one piece of the huge *templo* San Augustin a white marble tablet has been set in, which identifies the temple and gives the date of the cataclysm. The inscription is as follows:

“Ruinas del templo de San Augustin destruido por el terre-moto del 20 de Marzo de 1861.”

There are rows of ruins of buildings which were but traps of death, and one would think that the people would flee from them as from the wrath of God at Sodom. Not so.

Modern Mendoza was soon builded. It was the place for a city and the earthquake could not blot it out and keep it so. The new town is not much more than half a mile, if as far, from the old one. It is in one of the most persistent earthquake zones in the world and people residing there are said never to sleep soundly. They likewise never close the doors of their homes, all one story high, for fear a jostle may bind them so that they will not open, and they run into the streets or courts at the slightest suggestion of a shock, for the imminent danger is top-most in their minds, keeping their nerves at a tension that none but a highly organized Latin could stand. Sometimes several weeks elapse without danger signals, and then again there will be a period of diurnal shocks, which may even and do manifest themselves many times daily.

Mendoza of the present day claims a population of 40,000. The last census gave it 28,602, so that 30,000 is probably more nearly correct. No one seems to know whether the town and the province of the same name, of which it is the capital, were named for Antonio de Mendoza, Count of Tendilla, or Diego Hurtiado de Mendoza, a Granadan statesman, *littérateur*, and soldier, or Juan Gonzalez de Mendoza, a renowned Spanish prelate and diplomat, or Pedro de Mendoza, a prominent Spanish explorer. All were nearly equally prominent and



EARTHQUAKE RUINS IN MENDOZA

served their king signally, but the latter was most active and potent in South America and it is his name, probably, which is thus perpetuated.

Pedro Mendoza was a remarkable person. Of noble family and a favorite of Charles V, he offered in 1529 to explore South America and establish colonies at his own expense. Such propositions were polite in Spain at that time and if accepted were always supposed to attach the king's support in the largest measure and most meaningful manner. Mendoza was made governor of all the territory between the Rio de la Plata and the Straits of Magellan, or nearly one-third of South America. The emperor gave him two thousand ducats and promised two thousand more if Mendoza would convey thence one thousand colonists, build roads into the interior, and construct three forts. His office of governor was made hereditary and he was to have one-half the property of all chiefs he killed and nine-tenths of all ransom treasure. In 1534, Mendoza left Spain with a big fleet. All went well enough except quarrels with Osorio, his chief lieutenant, until the coast of Brazil was reached, where a furious storm almost wrecked all of his little ships and drove several of them ashore. Osorio was regarded as a hoodoo and was assassinated upon the order of Mendoza. After collecting his scattered fleet as much as possible, Mendoza sailed up the

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Plate and founded Buenos Ayres in 1535. Sickness and hostile natives made life a fierce hazard for all. Mendoza's brother Diego, who led a force against the enemy, was killed, together with nearly all of his men. Then the Indians, who were similar to the true Araucanians, and who always gave evidence of martial valor and skill, formed a combination, captured the new town, sacked and burned it. Gonzalo, another brother, came with reinforcements, but instead of tarrying at Buenos Ayres, he went on up the river and founded Asuncion, Paraguay, in 1536. Pedro Mendoza, sickened, depressed, and disappointed, sailed for Spain in 1537 and died a raving maniac *en route*. He had not accomplished much and that may be why there are those who wish to credit the name of the state and city of Mendoza to one of the others of the many who distinguished the name.

Mendoza is one of the most charming of South American interior towns. In location and climate it reminds one somewhat of Denver, but the comparison must not be carried too far for the sake of Mendoza. The town has a national college, an agricultural school, and normal schools for both sexes. In the girls' normal school American teachers have taught at various times and they speak well of the capacity of the Argentina young women. Many of the streets are well paved with granite blocks. They are



of good width, are generally at right angles in crossing, and have ample sidewalks. Despite the water problem, which has been solved with fair satisfaction, there is much show of tree, shrub, and plant growth. The Avenida San Martin, named for the famous general, an heroic equestrian statue of whom, in bronze, is most gracefully poised on a magmatic granite boulder in one of the principal park squares, is ninety-eight feet wide and over four miles long, with a promenade of half a mile which is tranquil and fascinating. Artificial streams of crystal water with quick, purling current flow on either side, shaded by double rows of stately and graceful poplars, whose healthy bole and umbrageous canopies prove the friendliness of the soil. This broad drive, with its singing rivulets and four rows of fine trees, is a prettier public way than any of the pretentious boulevards of Buenos Ayres. In addition to this unusual *avenida* there are ten parks to testify to the love of public adornment and pride of civic culture. Of these, the Plaza Independencia is the largest, comprising ten acres. Handsome public buildings, a really fine, new hotel, well kept, clean, artistic, and comfortable, and many creditable homes conspire to make Mendoza a good town and one well worth stopping over to see *en route* between Valparaiso and Buenos Ayres, or even making a special trip to visit.

While we were in Mendoza, the general government had soldiers to the number of four thousand or more quartered there, to enforce the authority of a new provincial government. There had been an election. Both sides claimed to have won. The contentions were so bitter and unyielding that it looked like civil strife. The administration at Buenos Ayres sent a special agent to the scene with paramount authority, in pursuance of much the same policy that led Grover Cleveland to send Blount to Hawaii at the time of the proclamation of the republic there. This paramount government agent is called in Argentina an *interventor*. His dictum as to who is in the right settles the thing and the general government supports his decree, no matter if it is always claimed by the other side that the interventor ever decides the party to be in the right and entitled to provincial power which is friendly to the administration in power at the time at the national capital. This system seems arbitrary upon its face and to be fraught with much danger. At the time I write, March and April, 1907, the several interventors, or the conditions which led to their being sent out, seem about to plunge Argentina into internecine war.

Mendoza has an altitude of 2464 feet, and is only fifty-five miles from the great volcanic peak Aconcagua. Ardent spirits and their kindred



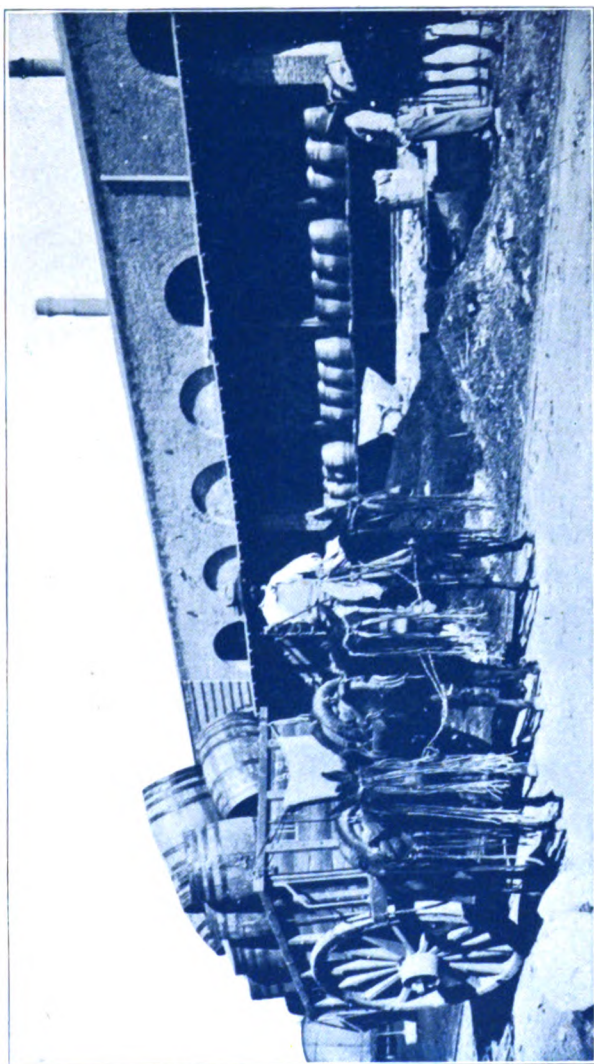
STATUE OF GENERAL SAN MARTIN IN MENDOZA PLAZA

are the leading products of Mendoza. There are three breweries, two distilleries, and one great winery, the latter owned by a chivalric Italian named Domingo Tomba.

The Tomba *bodega*, wine presses, and vineyards are the most extensive in Argentina. Buildings and machinery are all modern, and the big establishment is conducted with high method and perfect cleanliness. The grapes are handled by the ton and are of a superior kind. All of the crushing is done by the latest model of press and machine. The grapes are hulled, stemmed, and seeded automatically by machines operated by electricity, and all of the juice is pumped by compressed air. There are many hundreds of feet of huge cask cellars, where the wines are cooled, aged, and kept, comparing with the finest wineries of France, California, or Italy. Signor Tomba commands over a thousand acres of thoroughly cultivated and adapted grapes of French varieties and he manufactures more than one-tenth of all the wines produced in all of Argentina. The Tomba winery produced 18,000,000 quarts in 1906, and 24,000,000 quarts in 1907. Both red and white wines are made and the quality at the establishment cannot be easily surpassed. Most of the wine is shipped to rectifiers in Buenos Ayres, where one barrel of Tomba wine is turned into four barrels of rectified wines by a magic process known only to

the professional, but which will sooner or later receive the best attention of the progressive Argentina government, when the people get around to demanding honest liquors as well as pure food, a condition requiring centuries in England, France, Germany, Italy, the United States, and other supposedly superior countries. The wise Argentine will not be so slow, for in him is the cumulative intellect of many generations of ancestors and he already knows that alcohol has enough to stand for without having heaped upon its guilty head the myriad crimes of countless poisonous adulterants of wine, beer, whiskey, and brandy, and their kin. Domingo Tomba is a Venetian and claims descent from a Doge. Whether this be true or not, he is capable and progressive and his great winery, in which he is so ably assisted by the exceedingly gracious Herr Albert Pollet, from cooper shop to gayly caparisoned mules, is worth a visit even if one tarries but briefly in the vicinity.

Mendoza is a great trans-shipping point between Valparaiso, one hundred and sixty miles west, and Buenos Ayres, six hundred and forty-seven miles east. In mileage Mendoza is much nearer the capital of Chile, but the great barrier of the Andes intervenes, which makes it physically really nearer to Buenos Ayres. The Transandine Railway system proper has its eastern terminus at Mendoza, and while incom-



DOMINGO TOMBA WINE PRESSES, MENDOZA

plete it attracts a great volume of traffic over the divide which it is piercing with a tunnel to be ten miles longer than the Simplon. The passes of Uspallata and Portillo de los Pinquines were great rivals before the former was chosen for the railroad route. As many as fifty thousand cattle have been driven over the Andes from Argentina to Chile in a year. The railroad will never get all of the transandine business any more than the transalpine railroads get all of the traffic in their region.

Country women about Mendoza, most of whom are mixed-bloods, are strong and fine looking and as industrious as the men. They weave *fresadas de laña* by hand which are quite equal in quality to the somewhat more famous blankets of San Juan. Of rather loose texture, very heavy, woven from selected female sheep's wool, they deserve to class with the very superior blankets distributed by the Hudson Bay Company, and are quite as worthy of significance as the unique Navajo blankets. A very good sample of such a blanket, durable and characteristic, may be purchased for eight or ten dollars, American money.

The soil of the province of Mendoza inclines to sandy lightness and calls for irrigation.

CHAPTER XIII

THE ARAUCANIANS

Historical Sketch of the Brave Araucanians — Colonel Saavedra's Policy — Lautaro, the Moses of His People — A Pledge of Flesh and Blood — Destruction of Valdivia — Defeat of Villagran — Death of Lautaro — Barbarities of the Spaniards — Sacrificial Courage of Spanish Pioneers — Sieges of Imperial and Villa Rica.

IT was Colonel Saavedra who first and finally won the confidence and friendship of the unconquered Araucanians for Chile. The tribes divided during the wars for independence, some taking sides with Old Spain and others with the rebels. This division disturbed their unity of action forever, and so affected the uprising of 1884, the last of many and probably of all, that the seasoned veterans of the war with Peru and Bolivia made short work of it. The policy of Old Spain was to use brutal force against the Araucanians, and Chile inherited the idea, which persisted until Colonel Saavedra took a new course and treated them with kindness, respect, and confidence.

Inca authority down to the Rio Itata soon crumbled before the Spaniards, but the cooler

region of the Biobio, of south Chile, produced a different people, who kept up such a continuous and successful fight against the invaders as to pale the history of the resistance made by any other native people in the world. Valdivia first assailed them with two hundred horse in 1550. After crossing the Itata his progress was constantly beset with fighting. At a battle near Penco, every Spanish soldier was wounded, but the arrows of the Indians made no serious impression upon the leather cuirasses of the brave, but brutal invaders. Valdivia in one raid across the Biobio is said to have rounded up one thousand domesticated guanacos. At another time, after a second battle at Penco, he cut the hands and noses off of two hundred Indian prisoners and returned them to their comrades to indicate what could be expected by all who opposed him. Valdivia found a wonderful people who fished successfully, mined silver, and tilled the soil intensively, giving heed to sanitation and to authority. He established the town of Valdivia and many others and for a time was received in apparent friendship. The Indians were organizing and biding their time. Valdivia thought himself a conqueror and divided the rule of the Indians among his subordinates, retaining for himself a little kingdom of 40,000 acres between the Biobio and the Rio Cautin, a perfect garden of tilth. The little body of

Spaniards was as arrogant and vain as it was brave; they forced the Indians to work for them, had a big corps of attendants wherever they went, and their wives were equally catered to by women slaves.

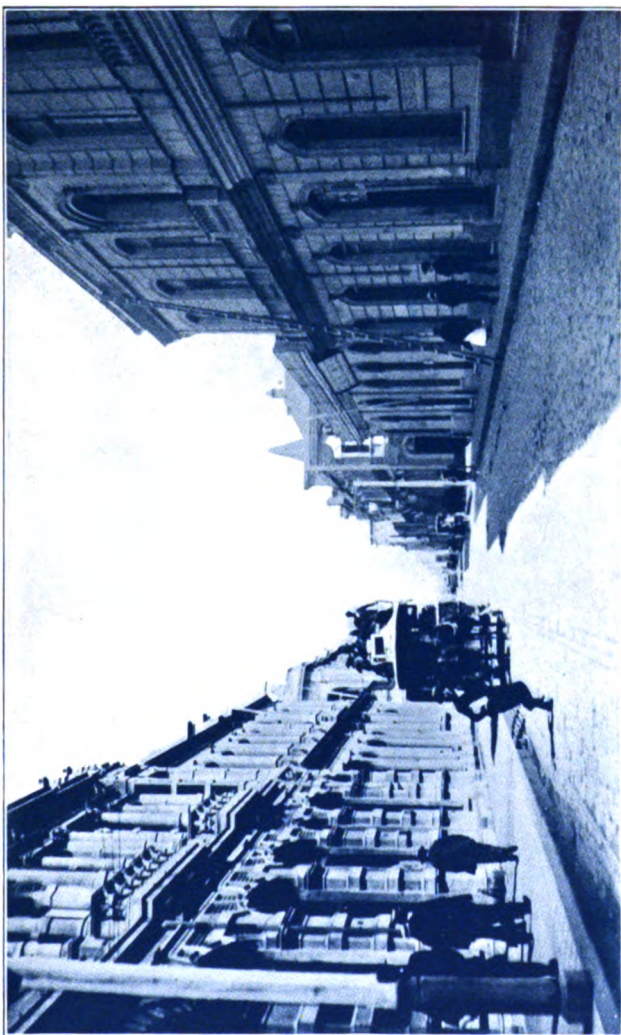
Lautaro was the Moses of the Araucanians. He was a horse boy to Valdivia and learned to manage horses. The horse had been a special terror to the Indians at first. They regarded it as a demon, or something superhuman. Lautaro dispelled all this. He deserted Valdivia and going among his people stirred them to war. Valdivia marched from Concepcion with a body of horse to quell the insurrection the strength of which he did not divine. Lautaro led his people in the battle with such fury that every Spaniard including Valdivia was either killed in the fight or captured and beheaded without torture. Valdivia tried to buy his life of Lautaro, but the offer was disdained and he was killed. The assembled *caciques* dipped their arrow points in his blood and each ate a small piece of Valdivia's heart as a sign of their union in the movement to expel the invaders.

So began a strife that covered intermittently three centuries. No sooner had a brief peace come and the Spaniards had moved into the Araucanian country with budding towns defended by forts, than savage war would break out more furiously than ever. It would seem

that at times the Indians would dissemble and pretend to admit the rule of the invaders, only to entice them into the heart of the Indian country, and exterminate them. The Indian horses multiplied and the Araucanians became as expert and as brave on horseback as the Apaches and even more intelligent and persistent. They had made the Biobio River the dead line for the Incas and they perpetuated it as such for the Spaniards. They had learned to be fighters through their wars with the hordes directed against them by the Incas, and as soon as their superstitious fear of white man and horse disappeared, which was coincident with the death of Valdivia, when even this leader was found vulnerable, they became almost invincible. Young men were more exactly trained than ever and they stood privation and punishment and contest and every exaction demanded of them like stoics.

Lautaro was only twenty-two years old, but, like Alexander of Macedon, he was transformed by war and especially by the holy cause of emancipating his people. After the death of Valdivia, the entire Indian population flocked to the standard and protection of the youth and needed no repeated plagues of Egypt to make them loyal and appreciative. All outposts were abandoned by the Spaniards and people and garrisons rushed to the stronger settlements like

Concepcion and Valdivia and Imperial. Villagran, with one hundred and eighty Spaniards, six cannon, and two thousand Indian mercenaries from the north gave battle to Lautaro at Marihueno. His army was swept away. Villagran managed to reach the shelter of Concepcion with twenty followers. Lautaro had hundreds of boys and women massed back of his army far enough away to resemble reserves, and the effect on Villagran when he saw these forces, apparently so disciplined that they awaited the issue of the battle patiently until needed, was overpowering. This manner of deceiving the enemy is spoken of in the histories of nearly all so-called civilized wars, but where did Lautaro learn it? Possibly it may be classed as one of the many resources of necessity. *Reatas* were used to drag the Spaniards from their horses, and Villagran himself barely escaped being lassoed. Lautaro pursued his defeated enemy so hotly that Concepcion was deserted and the Spaniards retreated to Santiago. There Villagran's wounds healed and he mobilized the strongest possible force and reinvaded the south. Finding a lot of peaceful Indians, mostly women and children and sick, Villagran set his murderers and bloodhounds upon them and not a soul escaped. In revenge for this Lautaro destroyed broadcast and made three attempts to capture Santiago, very nearly succeeding.



THE BEST STREET IN CONCEPCION, CHILE

At the battle of Chilipirco Lautaro was killed. He had reached his twenty-seventh year and died a hero. His life and deeds are gloried in to-day by all Chile, Indians, half-castes, and whites, for it was the admixture of the blood of Lautaro's people in white veins that produced a race that secured the independence of Chile.

Mendoza succeeded Villagran for a time and had a fine army. Caupalican, a leader as brave as Lautaro, nearly exterminated it. After one battle, the story is told, Mendoza hanged thirty chiefs. One *cacique* asked to be hung on the highest tree, so that all could see how gladly he died for his country. There was a short cessation of hostilities which the Spaniards took to be a lasting peace. Villagran again returned, and almost simultaneously there was an Araucanian uprising. He attacked the native fort at Catiray, but his cavalry stumbled into holes and ditches that had been dug for it by the Indians, and the Indians making a sortie fell upon the confused and crippled horsemen and won a complete victory.

The barbarities of the Spaniards eclipsed those of the natives. Mercado cut one foot off of every prisoner taken. But the Indians fought on with greater desperation than ever and defeated their foes time after time, securing horses and cannon which they had learned to use effectively.

The Araucanian commander, Millalelmo, when

he died, in 1570, ordered his body cremated that his soul might rise to the clouds and continue to fight the Spaniards if he found any up there as the priests claimed.

Marching from Imperial to the relief of Angol, Loyola's army was totally destroyed. Following this success in 1599 the Araucanians attacked and entirely or partially destroyed Chillan, Angol, Santa Cruz, Valdivia, Osorno, Imperial, Villa Rica, and Concepcion. The defence of Imperial lasted sixteen months and the defence of Villa Rica three years, Spaniard and Indian rivalling each other in courage, sacrifice, and cruelty. The garrison of Villa Rica fought until starved to death. Only a handful of men and women made the last struggle when the fort was burned and they were captured. The prisoners were not mutilated and were not often tortured. If put to death, it was done swiftly and thus kindly as compared with the tortures of the Spaniards.

After the bloody years leading up to 1641, the Spanish governor of Chile recognized officially the independence of Araucania. A cruel and headstrong wife of a Spanish governor caused an uprising of the Araucanians in 1655. The natives captured three thousand prisoners, devastated a large area, drove off a half million sheep, goats, horses, and vicuna, and seriously menaced Santiago.

It is estimated that at the close of the seven-

teenth century the attempt to subjugate Araucania had cost Spain thirty-four million dollars and over forty thousand soldiers, besides untold and indescribable suffering.

There were troubles all through the eighteenth century, and in 1770 the Spaniards again officially recognized Araucania and made a peace. Soon followed the war of independence into which the Araucanians were drawn, some on the one side and some on the other.

Historians agree that these Indians were brave, sober, industrious, and kind, and did not even take on the brutalities of their Spanish foes. Their number has decreased from more than half a million to less than half a hundred thousand. They have diseases peculiar to civilization, to which they quickly succumb, and *chicha* is doing its part more destructively than ever the Spaniards wrought with cannon, sword, and lance.

The Araucanians of to-day appear much the same as described by writers centuries ago. In height they are slightly below the Caucasian average, arms and legs strong and well formed; hair straight, lustrous, reddish black, and of the women falling below the waist; head and face round, countenance rigid, nostrils inflated somewhat like the negro but not so much; beard scant, caused by being constantly pulled out; short hands and fingers; small, strong feet.

Their language was adequate and contains more harmony than volume. One article has only one name and there is a disposition to use words of many syllables as in the North American Indian languages. Silver was the only metal they wrought in when the Spaniards came. They were phallic and sun worshippers and were proud of their families. The wives of chiefs wore heavy silver breast plates inscribed with the number of their boys and girls, and the wife with the most numerous offspring was the ruler of the others. Silver stirrups, delicate silver bead bracelets, silver bells, silver bust bands, silver bugles, silver pins and studs, silver head bands, were all used. The beautiful young women, with silver bands crowning their glistening black hair, were superlatively attractive.

The glories of the Incas and their civilization have been told in song and story from Herrera to Prescott, but few have raved over the Araucanian. It is true Ercilla has sung the love tale of Lautaro and Guacalda in his epic, and Olivares has proclaimed their tongue as suited to their proud genius, but no writer in English has done them justice. They were braver, better sustained, and had a more practical civilization than the Incan people. The Incas disintegrated before Cortez, but the Araucanians fought and defeated a hundred Spanish generals and were never conquered. Better than all else, during



OX TEAM AT CONCEPCION, CHILE

the centuries they so mixed with and gradually impressed themselves upon the Spaniards as to form a race in the present Chileno superior to any of the early Spaniards, and the Spaniard of three centuries ago saw Spain at its best.

Chile is one of the strong hopes of South America and the Araucanian has given it the temperament that makes it such.

CHAPTER XIV

MINES AND RAILROADS

The Labor Question in South America — Mines and Minerals — The War between Chile and Peru — Talk of Union of Peru and Bolivia — Nitrate Certificates — Mining Conditions in Chile — South America the Bay Window of the World — Fuel Supply and Cost — Copper Mines of Copiapo — Greater Chances in the United States — Holidays break up the Year — The Christian Endeavor Founder and President Montt — Intemperance a Common Curse — Chile and Argentina watch Each Other — The Oroya Railroad — Henry Meiggs — Oroya Indians with Blue Eyes and Red Hair — Lake Junin the Highest Navigated Water on Earth — Lake Titicaca — Lima and its Fine Museum — Dr. Max Uhle, Director — Merino, Artist — Cerro de Pasco Mines and Railroad — Route from Lima to Iquitos — Mollendo a Wild Port — Railroad, Antofagasta to Oruro — Fresh Water Scarce — Bolivian Tin Mines — Rubber Operators — Harvard Ethnological Expedition — The Natives — The Llama — The Great Nitrate Industry — Geologist Merriam, of the United States Steel Company.

THE labor question keeps Chile from producing as much copper as it would like to turn out with the present high prices (1907). A leading Chilean copper-mine owner told me they

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needed hundreds of men at his mines and were only working a total of one hundred and sixty. The labor supply is most inadequate. To make matters worse, when the price of copper is high the miners leave the mines and work at tributing in a small way on their own account, accomplishing only a small output, but doing quite well individually as compared with their wage at the mines.

Argentina and Chile are said to possess a great deal of iron ore. Chile has just guaranteed a French company five per cent interest upon twenty-five million francs for the purpose of starting iron making at Valdivia. The guarantee holds for thirty years and is accompanied by large forest concessions. Generally speaking, the ores of Chile are in the north, agriculture in the centre, and timber and coal in the south. Valdivia is in the south. Kilns, furnaces, iron mills, and saw mills will be erected and ships built if the plans are carried out. Lumber will be carried from Valdivia to northern ports and iron ore will be the return cargo. Charcoal pig iron will be made and much is expected of the enterprise. It is the present policy of Chile to encourage home industry by many forms of bonuses, of which the guaranteeing of a profit of at least five per cent is the most common. The country is fairly prosperous and would be much more so if adequate and efficient labor could be obtained.

The Chilean government has consented to a combination of all the nitrate producers. This is for the purpose of regulating the volume of production so as not to glut the market, but not to fix an arbitrary price higher than would naturally follow from curtailing production. The production for 1907 has been fixed at forty million quintals of two hundred and twenty-five kilos, or about four hundred and fifty pounds. Upon each quintal the government gets a royalty of one dollar and sixty cents, or about fifty-five cents gold. At this writing (1907), the price of nitrates in Europe is about two dollars and twenty-five cents, gold, or nine shillings, three pence per quintal. The government royalty is fixed upon a sliding scale with the price as a basis of computation. Although most of the salitre goes to Germany the price is always expressed in English money.

On the Atlantic side of South America the Chileans are hated and feared. One hears of them as a pirate nation whose war with Peru and Bolivia, 1879 to 1881, was a war only of conquest with no justification beyond greed, or, as the Germans say, something like England's sacking of the Boers. But the Chilean version is different, just as England's story is different.

From the time of independence, the boundaries between Chile and Bolivia were in dispute. The first clash was in 1842, when a Bolivian

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army officer ordered off a Chilean and a Frenchman who were working nitrates in a small way at twenty-five degrees south latitude, which territory both Bolivia and Chile claimed. The nitrate operators refused to obey the order, and in 1843 they were arrested and imprisoned by Bolivian authorities. This led to a convention between the countries at which a treaty was framed. Bolivia agreed to recognize twenty-five degrees as Chile's northern boundary, and in the zone between twenty-five and twenty-seven degrees Bolivia was given jurisdiction with the explicit provision that Chileans should be permitted to operate there without hindrance of any kind, whether in form of tax or otherwise. Along in the seventies Peru got embarrassed by seeking to purchase and control the nitrate production of the world. It bought all the Peruvian properties, issuing nitrate certificates of long time and good rate of interest for them. Then the Peruvian government agents bought all the Bolivian nitrate holdings north of twenty-seven degrees, and at about the same time, 1873, a secret treaty of alliance against Chile was entered into by Peru and Bolivia. Meanwhile, Chileans had built the town of Antofagasta in the neutral trade zone above referred to and had developed a large nitrate industry. This the owners refused to transfer to Peru. They were in the way and Bolivia was induced to put on the

screws so as to convince the Antofagastans it would be wise to sell out. A municipal tax on nitrates was levied by the Bolivian powers in Antofagasta. Representations were made by the Chileans to their government that the treaty between Chile and Bolivia was being violated. The question was taken up with Bolivia and the latter made the claim that the treaty only referred to government impositions and did not comprehend or prohibit municipal charges.

Chile dissented from this construction and practically gave Bolivia an ultimatum to the effect that the Antofagasta tax must be removed or Chile would take steps to enforce its rights under the treaty. Bolivia delayed matters all it could and while moving troops to the frontier sent a special envoy to treat with Chile. Peru also began to move troops and munitions of war toward the scene of trouble.

This made Chile suspicious, and about the first thing the Chilean Secretary for Foreign Affairs asked the Bolivian envoy was as to whether a secret treaty of alliance existed between his country and Peru. The envoy was embarrassed, but replied that so far as he knew there was no such treaty, and he would of course know because he had been chairman of the committee on foreign relations in the Chamber of Deputies during 1873 when it was charged the secret treaty was made. At this fatal juncture

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the Chilean minister to Peru secured a copy of the secret treaty and cabled its contents to his government. The special envoy was dismissed in disgrace and war was declared April 5, 1879.

The Chileans took possession of Antofagasta and invested both Bolivia and Peru. They were better armed and drilled and fought better than their antagonists. The Bolivians made a poor showing. The Peruvians fought bravely but were defeated repeatedly. After two years of almost barbarous warfare, during which Peru was especially wasted and ravished, the Chileans accomplished a complete victory and they made the most of it by taking over all of the Bolivian and Peruvian guano and nitrate territory.

The Chilean government finally recognized the nitrate certificates issued by Peru, and either redeemed them or permitted the holders to turn them in and resume possession of the properties they were issued against. Most of the holders did this although the proportion redeemed cost the Chilean government over \$100,000,000 gold. These properties have since been sold at auction to private parties, and so all the nitrate industry which so narrowly escaped being a Peruvian government monopoly is in private hands.

Peru and Bolivia only now after nearly thirty years are recovering from the terrible state the war plunged them into. Bolivia's tin mines have

begun to enrich the country in a highly satisfactory way and Peru's mineral resources have been found to be rich and varied and they are developing rapidly. There is much talk of a union of the countries, which proposition is favored by the solid interests of both nations and may possibly be brought about, although Chile is opposed to it. At best they will never get back their Alsace-Lorraine.

The mining conditions of Chile are generally unfavorable, but are certain to improve with time. In so far as the government regulations are concerned, little is left to be desired. The government mining laws are liberal, fair, and dependable. A discovery claim consists of fifteen hectares. One acre is .4047 hectare, and one hectare consequently equals about two and one-fifth acres. A mining claim other than a discovery claim is five hectares, so a discovery claim consists of three ordinary claims. No one person may file on more than one discovery claim in a district, but by using other names an indefinite number of discovery claims may be obtained. It is required that a bona fide "discovery" shall be made, but inspection is so lax that this rule is rendered practically void. Development is not compulsory and the tax required upon undeveloped claims is now very low. Until recently this tax was ten pesos a hectare, but it has been reduced lately to one peso gold a hec-

tare, or about twenty-five cents of United States money per acre per year.

Chile is particularly rich in minerals and, comparatively speaking, its territory is unexplored. In the country are two mountain ranges proper; the coast range, varying from 2000 to 12,000 feet, and the main Andes, parallel to and east of the coast range, rising to a height at Mt. Aconcagua, variously given at from 22,868 to 23,910 feet, the greatest elevation officially recorded in the Western Hemisphere. The coast range comes down sheer to the sea in many places and is never many miles back. Exploration, both ancient and modern, has been confined to the coast range for the most part, and the interior has been scarcely touched. The greatest drawbacks to mining in Chile, and the conditions here are typical of South America, if they are not better than the average, are bad labor, bad transportation, high priced and badly distributed fuel, and isolation from the centre of the world's consumption.

The nitrate fields command the best labor in Chile and there the best wages are paid, yet the conditions are far from ideal and do not approach those existing in mining communities in the United States. Many influences only to be supplied by time may effect an improvement. Higher development in the intelligence, morals, and habits of the workingmen will be important.

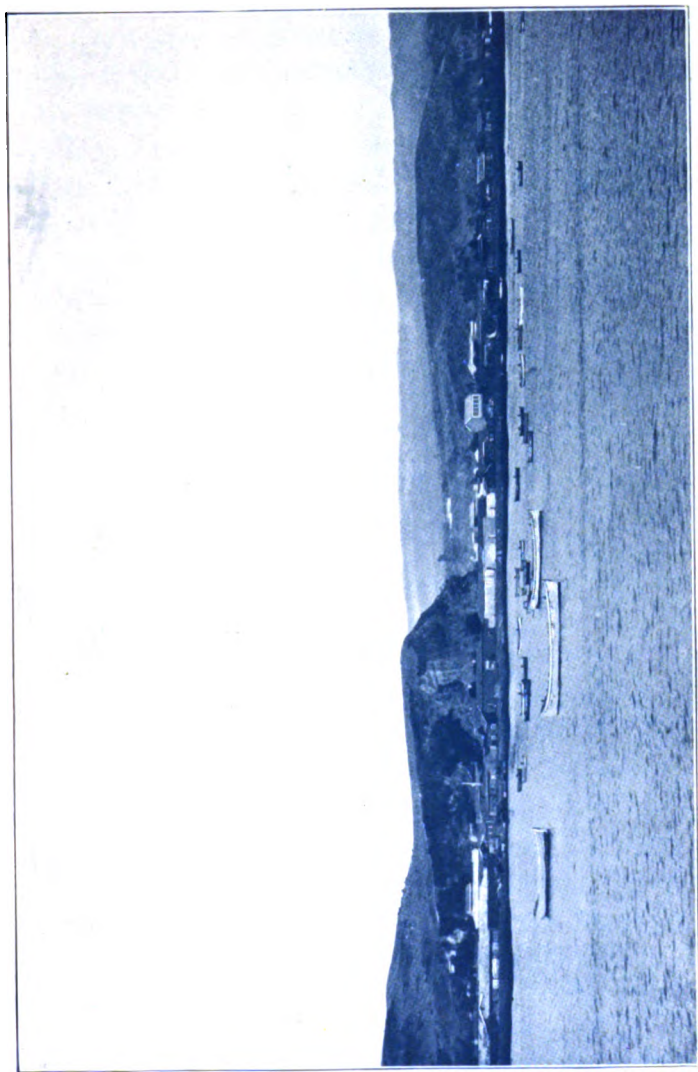
In the matter of transportation there will be an improvement always as time goes on, but it will be a long time before there will be an adequate coast railway service, and much longer before the interior is thoroughly served, both on account of small population and physical barriers.

The fuel question may be partially solved in certain parts by the development of water powers and the use of electric energy. This work is just starting and bids fair to accomplish highly satisfactory economical results.

As to the matter of isolation, both local and general, it may be taken as a permanent fact that South America will be not much more than a bay window to the rest of the world until the unlikely event of a cataclysm that will shift the positions of the very oceans and continents themselves, in which case these problems will only confront a new race of beings, if any.

There is no coking coal in Chile, and very little, if any, on the entire west coast. A small vein or two of coking coal is reported to exist in Peru, but there is not enough to have any bearing on the coke supply, all of which is obtained in the United States and Europe.

Coronel is the chief coal port of Chile. It is twenty-eight miles south of Valparaiso. The coal found there is considerable in quantity and fair in quality. It is quite rich in carbon and is



CORONEL, CHILE

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a good steaming coal. Steamships trading on the west coast coal at Coronel very generally, and would, if they were served, consume almost the entire supply.

It is not uncommon for steamers to pay seven dollars United States gold a ton for Coronel coal on long time and large contracts. In April, 1907, coal at Coronel sold as high as twelve dollars United States gold a ton. On April 15, 1907, the wholesale price of coal at Guayacan, two hundred and four miles north of Valparaiso, a coast town, was thirty-eight paper pesos a ton, or about nine dollars and a half United States gold. With such prices prevailing at the mines and at coast ports, one may imagine the cost of coal after it has been moved into the interior. The wood supply is scant and not to be taken into serious consideration, so the fuel question is a serious one.

In spite of all these drawbacks, there are a good many instances of profitable mining. The copper mines at Copiapo are down thirty-two hundred feet, have a vein a metre wide and are working no ore that does not contain eighteen per cent of copper, while some of the ore runs sixty per cent and even higher. The output in 1906 was about twenty-seven thousand tons.

It may be said of South America that there are opportunities for only two classes in mining,—the man who has large means and the man who

has nothing. Even then there are ten chances in the United States, Canada, and Mexico to one in South America. Chile is the leading mining country in South America. It has a total area of 290,000 square miles. In the United States alone, including Alaska, there are over a million square miles of mining territory unprospected. So no young man, or old one either, need go to South America for chances, unless some special inducement is held out to him.

South America has had its taste of the mining boom that during the last five years has been as widespread almost as the world. In Chile there has been an epidemic of speculation such as the country has never witnessed before. It is in the Latin blood to gamble, and one wildcat company after the other has been organized. Apparently the finer the shares were lithographed the better they sold, and the public was so loaded down with the worthless stocks that it needed only the great earthquake to produce a crisis.

A sufficiently open window to the character of labor in Chile may be had in the fact that the German steamship *Theben*, of the Kosmos line, waited nine days at Coronel during the last week of March and the first week of April, 1907, to obtain eight hundred and ninety tons of coal, although the Kosmos is one of the largest and most influential companies in the west coast trade

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and at the time had a contract for two hundred thousand tons of coal. Of the nine days five were feast days and, of course, the steamer had to wait, as no work could be expected on a feast day, even though every day's delay cost the steamer two hundred dollars in maintenance alone. No man works on Sunday, which would be commendable if that day of rest were not given over to excessive drinking and carousal, so that Monday is needed in which to taper off and sober up. Practically no work is done on thirty to forty feast days, on fifty-two Sundays, on fifty-two Mondays, and on three hundred and sixty-five nights during the year. Add to this a few strikes and some days off for sickness, several more days for drunkenness, some time for weddings and funerals and other events that keep the laboring man from his toil, and the year is badly broken up.

The question of alcoholism is even more serious in South America than it is in England. The higher classes drink imported champagne; the middle classes drink the fiery *tocornal* and other semi-artificial wines; the lower classes drink *chicha*, a sort of grape cider which hardens with fermentation until the percentage of alcohol is high and makes the drunk come quickly.

I was present at an interview between Dr. Clark, of Boston, founder of the Christian En-

deavor, and President Pedro Montt, of Chile. Dr. Clark told President Montt he was connected with an organization that had for its purpose the furtherance of temperance among the aboriginals of the world, and asked the president what was being done in Chile to reduce the consumption of alcohol among the Indians. President Montt was polite, but smilingly replied in kindly tones that not many Indians remained; that they did not drink intoxicating liquors to excess as a general thing, thus differing from most primitive peoples who have come in contact with the whites, and that if Dr. Clark's society wished to be practical in its work and really do good, it could better devote itself to civilized whites, not only in Chile, but in America, England, and over the world wherever white civilization has carried alcohol and has made it cheap and easy to get.

President Montt turned to me with a face full of sorrow and seriousness, and said that intemperance is the rock that wrecks most Chilenos, and that the problem of drink was receiving official attention from local authorities throughout the country. The zone system for *cantinas* has been adopted; temperance is taught in all of the schools, and in many towns the laws have been made so strict as to reduce the number of saloons, while in almost all communities the *cantinas* are required to close earlier at night,

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open later in the morning, and in many places they are compelled to close entirely from two to four days each week, thus reducing the opportunity for easy drinking. Despite the fearful tales of intemperance, one does not see one quarter the number of intoxicated persons publicly that is seen in England. The reason for this may be the difference in the effect of bad whiskey and bad wine, or the difference in the habits and actions of a drunken Englishman and a drunken Chileno.

The railroad dream of South America, which also has its advocates in the United States, is a pan-American railroad stretching from Alaska to Cape Horn. One may see maps of it, marking the line from the Klondike to Juneau, to Seattle, to San Francisco, San Diego, City of Mexico, Ayutla, Nicaragua, Panama, Lima, Cuzco, Antofagasta, Valparaiso, Valdivia, with of course connections to Chicago, New York, Rio de Janeiro, and Buenos Ayres.

The only transcontinental railroad or railroads in South America connect or partially connect Buenos Ayres and Valparaiso, a distance of eight hundred and eighty-eight miles. The system is made up of the Buenos Ayres & Pacific, Argentine Great Western, Argentine Transandine, and Chilean Transandine. The route takes one through the wide prairie-like pampas of the Argentine and over the majestic Andes at a height

of near 13,000 feet, to be exact, 12,796 feet. La Cumbre has to be surmounted by coach until the great new tunnel is completed, which will require several more years. This of course precludes the transportation of much freight and cuts off anything like popular travel. Chile now has a treaty of arbitration and disarmament with Argentina, but does not view railroad connection with Argentina any too complacently, which feeling bobs up every once in a while, and is quite embarrassing.

Wages in Argentina are higher than in Chile, and the latter country is said to believe that easy and cheap access to Argentina would affect the Chilean labor situation disastrously, although it would bring Chile full ten days nearer Europe and would permit obtaining flour from Argentina that is now imported from Australia. The tunnel connection is very uncertain as to date of completion. So in reality in effect there is no transcontinental railroad in South America.

Chile is not over-encouraging to the new South Argentine road, which desires to cross at Las Lajas and join the Chilean railway system at Victoria. It would look as though the agitation for a confederation *à la* Germany, of Argentine, Chile, and Brazil, the dream of some optimistic South American statesmen, is not to effect much quickly.

I am informed by Señor Don Ernesto A. Huebner, an ex-cabinet minister of Chile, that

while the above conditions existed in 1905 and do to-day (1907), the policy of Chile has changed entirely with the result that railway connections will be made, not alone with Argentina but also with Bolivia, as soon as the Andean tunnel can be completed in the first instance and the new Bolivian railway can be finished in the second instance. The first is the work of an English-American company whose bonds are given a five per cent guarantee by the Chilean government. W. R. Grace & Co., of New York, are fiscal agents. The second is a Chilean enterprise and will cost fifteen million dollars. Also there is under construction a railroad that will pierce the Andes at a much lower altitude than the present Transandine route. This is the Antuco railway, crossing the mountains through Antuco Pass at a height of about seven thousand feet. It starts at Chillan and will terminate at or near Mendoza in Argentina. Railway construction in Chile is very active indeed at present. Almost all the roads are owned by the government and are successful.

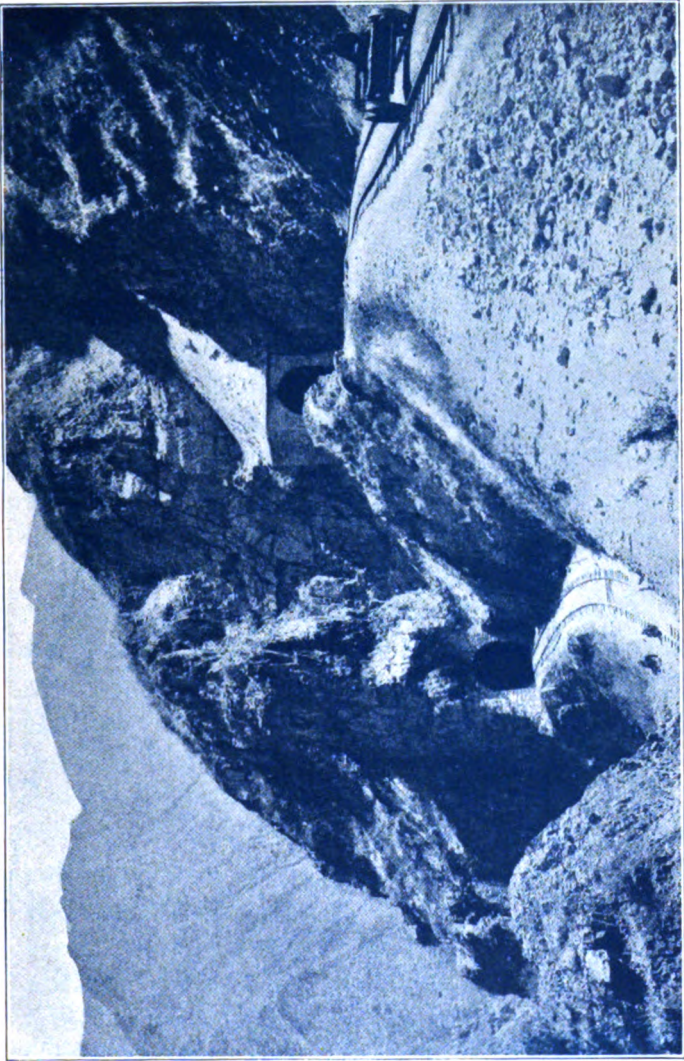
Bolivia has no seaport and seems to be destined to absorption by Chile, Brazil, and Argentina unless it joins Peru *à la* Austria-Hungary.

The Oroya Railroad, crossing the Andes in Peru, is the most remarkable mountain railroad in the world. In one hundred and thirty-eight miles from the seacoast at Callao, it climbs to an alti-

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tude of 15,665 feet, or one-fifth of a mile higher than Pike's Peak, or Rainier or Shasta. The railroad was built by Henry Meiggs, an American, while a fugitive from justice. The Oroya Railroad has no time card for the public or advertising folder or anything but itself to proclaim its marvellous engineering feats and its wild and gloomy, though picturesque, scenery. The highest point, 15,665 feet, is Tunel del Paso de Galera, a tunnel through Mount Meiggs. The mountain itself, which will forever be a monument to a most unusual Yankee, looks like a weather bronzed castle on the Danube. Its altitude is 17,575 feet, but it is too near the equator to be crowned by everlasting snow.

The ascent of the Andes does not properly begin until Cocachacra is reached, forty-five miles from Callao. From here to the Galera it is a steady climb and there are sixty tunnels. The Galera tunnel is about a mile and a quarter in length (2032 yards). The maximum grade is four per cent, and the gauge is standard, four feet, eight and one-half inches. There are seven switchbacks and four complete circles. The bridges are all of steel, the rail is seventy pounds to the yard, and the rail braces on the curves are especially heavy and ingeniously made from steel railroad rails. The ties are of California redwood and there are three thousand to the mile. American locomotives and Ameri-



SCENE ON THE OROYA RAILROAD, PERU

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can cars are used, and the physical condition of the road is well maintained.

For the most part the Oroya Railroad follows the Rio Rimac. At one point, by a piece of especially bold engineering, the Rimac is diverted through a mountain tunnel and the railroad usurps the boulder-strewn river bed. The Puente Infernillo connects two tunnels which open in a wild gorge through which the Rimac roars and plunges like the Via Mala of the upper Rhine. Just once on the way the railroad leaves the Rimac and follows up the Rio Blanco, which it crosses four times by feats of sensational engineering, and then returns to the Rimac by crossing Capa Puente at an altitude of 11,638 feet above the sea. In one *quebrada* the traveller may see five different sections of the road, one above the other, climbing the mountain. The building of the road required courage and resource of the highest kind, and its maintenance has demanded persistent and wearing watchfulness. Once, in 1874, during the period of construction, an avalanche near Matucana covered a railroad camp hundreds of feet deep with mountain detritus, killed three hundred persons, and so dammed the Rimac that a fearful volume of water accumulated and the people of Lima were agitated by the danger of the city being swept away. The genius Meiggs took a great crew of Chinese, let the water through

gradually and averted a destructive flood. The Verrugas bridge, steel, five hundred and seventy-five feet long, and two hundred and seventy-seven feet high, replaces a previous bridge that was washed away. Torrents and avalanches are the great enemies of the mountain railroad.

William H. Cilley, of the United States, was the engineer of this most unusual of all the mountain railroads of the world, but so modest was he that all of the fame of the accomplishment has been bestowed upon Meiggs, when it should have been divided. This was not due to any unfair assumption on the part of Meiggs, who was too busy doing things all of his life to think of praise. The credit he wanted is the kind that brings money, and he got it.

The traffic of the road is varied and it is a question whether it has ever paid. One of the unique industries on the line was an ice quarry, where ice was taken from an Andean glacier and shipped to Lima and Callao in large quantities before the days of ice machines and artificial ice.

The Oroya road taps the richest known mining section in Peru, and considering that it has been a first factor in the exploitation of this region, its construction has been fully warranted.

The railroad is operated at the present time by the Peruvian corporation, an organization of English capital formed by W. R. Grace & Co., and represented by them. This was made pos-

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sible by the fiscal failures of the Peruvian government, which precipitated the Oroya road into the hands of the bondholders, who really compose the Peruvian Corporation.

East of the Andean watershed, the Oroya Railroad follows the Rio Yauli to Oroya. From its present terminus it may some day be extended to Iquitos or some other point at the head of navigation of the Amazon. It would pass through a productive territory and could no doubt be made profitable in time.

Some travellers over the Oroya Railroad go to Matucana, elevation 7788 feet, and remain for a day or more in order to become accustomed to the altitude and thus render themselves less susceptible to *sorroche* as they proceed onward and upward.

In 1907 through passenger trains from Lima to Oroya were being run on only three days of the week, Mondays, Wednesdays, and Fridays. The train leaves Callao at 6.05 A. M.; leaves Lima at 6.50 A. M., and arrives at Oroya between five and six o'clock in the evening. Returning, the schedule is reversed except that trains leave Oroya later in the mornings of Tuesdays, Thursdays, and Saturdays. Fare, Callao to Oroya one way, 14.70 soles, or about \$7.35 in United States money. The train conductor is an accommodating Yankee who has been in Peru for many years.

Following is a list of the stations on the Oroya Railroad, with the distances from Callao given in miles, and the altitude above sea level given in feet:

**DISTANCIAS Y ELEVACIONES SOBRE EL NIVEL DEL MAR DEL
F.-C. CENTRAL DEL PERU**

DISTANCES MILES	STATIONS	ELEVATION ABOVE SEA LEVEL FEET
0.0	Callao Estacion Principal	8.7
0.9	Talleres del Ferrocarril	
4.3	La Legua, Desvio	
7.7	LIMA, Monserrate	499.9
8.1	Id. La Palma	
8.4	Id. Desamparados	
9.0	Id. Viterbo	
18.3	Santa Clara, Estacion	1,311.7
33.6	Chosica, Estacion	2,800.6
40.3	Purguay, Puente	
40.8	Corcona, Puente	
45.0	Cocachacra, Hacienda	4,622.6
47.1	San Bartolome, Estacion y V	4,959.4
51.9	Agua de Verrugas, puente	5,839.4
52.8	Cuesta Blanca, tunel	6,001.1
56.5	Surco, Estacion	6,660.9
61.8	Challapa, puente	7,504.1
63.9	Matucana, Estacion	7,788.8
65.5	Quebrada Negra, puente	8,054.1
68.8	Tambo de Viso, puente	8,706.5
73.0	Chaupichaca, puente	9,470.6
74.9	Tamboraque, V	9,820.9
76.3	Aruri, V	10,094.5
78.7	San Mateo, Estacion	10,534.1
80.4	Infiernillo, puente	10,919.9
81.6	Cacray V, doble	11,033.1
83.9	Anchi, puente	11,306.4
84.8	Copa, puente	11,638.8
88.0	Chicla Est. Nueva Lower V	12,215.5
90.0	Id. Upper V	12,697.1

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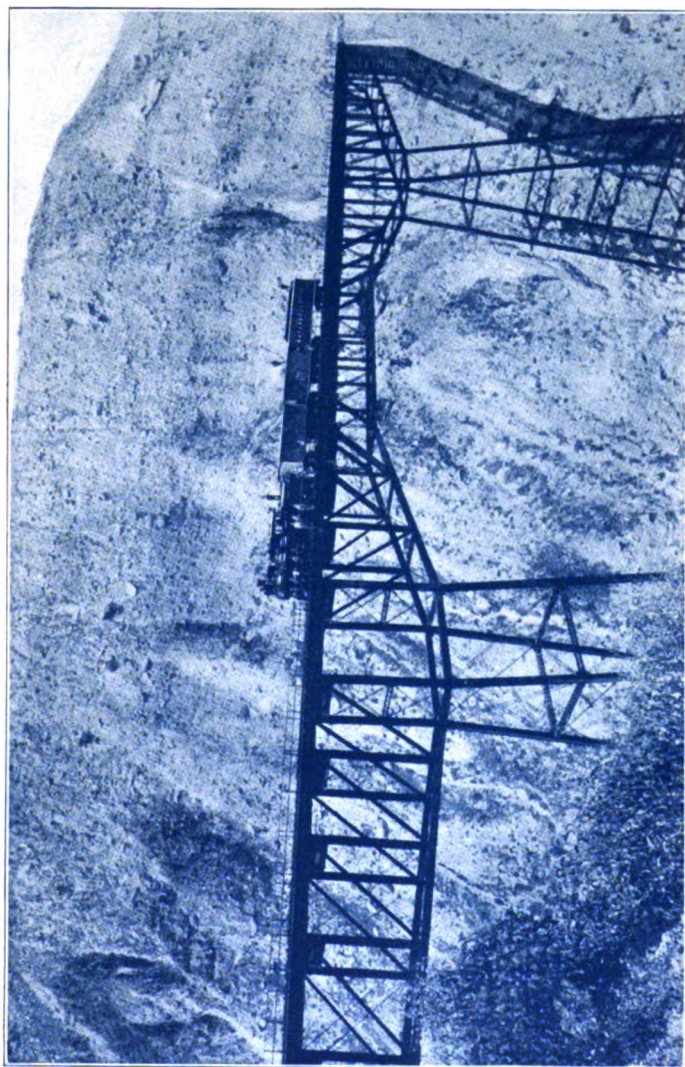
MILES	STATIONS	FEET
95.5	Casapalca, Estacion	13,606.2
106.4	Tunel del Paso de Galera	15,665.0
	Punto mas elevado del F. C.	
	Monte Meiggs	17,575.1
110.9	San Antonio de Viso	
113.1	Rumichaca	
120.5	Yauli	13,420.8
138.0	Oroya	12,178.7
159.0	Tarma	10,279.0
202.0	Cerro de Pasco	14,301.0
174.0	Jauja	11,874.0
410.0	Huancayo	10,636.0
804.0	La Merced	2,550.0

No tale of the fortunes which have been built up by Yankees in the countries of South America would be complete without reference to the career of Henry Meiggs. His operations in Chile and Peru form the most spectacular story of finance which South America has ever furnished.

In October, 1854, Meiggs fled from San Francisco not only a ruined man, but a fugitive debtor. For several years his whereabouts were unknown, and then word came up from the South Pacific of the gigantic operations then being engineered by a daring operator named Meiggs. Investigation showed this to be the Meiggs who had fled from debt in California. Then Meiggs' creditors began to hear from him, and one by one the California debts were wiped out. Even a washerwoman to whom he owed a few dollars was sought out by his agents who were instructed not only to pay the long-standing laundry bill,

but to add enough gold to place the poor woman forever beyond want. One lot of debts Meiggs declined to pay until by a readjustment the full amount of the claims might be passed to the original creditors. These were claims which had been purchased for a song by speculators when the first rumor of Meiggs' South American success reached the California coast. To the brokers he turned a deaf ear, but declared himself ready at any time to meet the original creditors. For a time the brokers held out, but as Meiggs was safe from attack, they finally were obliged to yield, and the money for thousands of Meiggs' debts was thus forced by him into the possession of its rightful owners.

Meanwhile his South American fortune had grown. Meiggs cleared a million dollars from a contract for the building of Chile's first railway, between the port of Valparaiso and Santiago. Next came the construction of Peru's original railway line between Mollendo and Arequipa, which doubled Meiggs' fortune. Every contract was made directly with the government of the republic wherein the road was to be built. Scheme after scheme, each more gigantic than the other, was successfully carried out. Meiggs at one time offered to build a breakwater at the mouth of Valparaiso's harbor, without cost to the government, if the Chilean government would give him a ninety-nine year lease of the sheltered



PUENTE INFERNILLO

side. Forty millions would have been the cost. The Chileans demanded a large price for the rental of the sheltered side of the breakwater, even should the work be done without cost to the republic. Consequently the project failed, and to-day the wind-swept bay is without protection.

In 1870 the financial world was interested by a big contract entered into between Meiggs and the Peruvian government. This called for the construction of a complete Peruvian railway system, even to a line crossing the summit of the Andes. Meiggs was to deliver the lines ready for operation and receive the sum of one hundred and twenty-five millions in gold, payable in instalments as the work progressed.

At first the money came promptly, then Peru was forced to borrow to meet the Meiggs contract, and finally when European loans could not be effected, Meiggs accepted the obligations of the Peruvian government until he practically owned the republic. Even the assassination of his friend Colonel Balta, then President of Peru, failed to interfere with the railway plans.

Finally Peru could do no more, and Meiggs' own fortune was tied up in the building of the railways. So for lack of money the work was stopped.

Negotiations for a further loan from Europe, with Meiggs' assistance, were almost consummated, when in 1877, death cut off the most

remarkable career of any Yankee in South America. With his death the loan negotiations failed, and then followed Peru's unfortunate war with Chile. Until 1884 the Meiggs railway operations slumbered. In that year, when peace came to the two republics, the firm of W. R. Grace & Co., New York, took up the Meiggs contract.

In spite of his success, Meiggs never revisited the State of California. His trials there seemed to have created in him an aversion for the place. Even a resolution passed by the California Legislature, asking him to return, failed to influence him to visit the State. One of the peculiarities which characterized him was that he always worked alone. It is said that there never was a partner in his dealings. His personality was most attractive and his manner seldom changed, no matter what the provocation. He inspired confidence easily.

The domestic life of Meiggs was as spectacular nearly as his business life, and his affairs and intrigues would enrich a French novelist. Meiggs' progeny has not startled the world, and it is even claimed that a monument provided for in the will has not been erected. The estate did not appear to be worth much, but the advance in value of large holdings of land between Callao and Lima will enable it to make a respectable showing. The old Meiggs palace in Lima is

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one of the sights of the city. Meiggs flourished in a time before the South American credit had been put to the test and before there had been any serious governmental failures or repudiation, and when much more could be expected than now.

Oroya, on the Mantaro River, one of the fine headwaters of the Amazon, has an altitude of 12,178 feet. The Mantaro is crossed on a rude, swinging, but strong, wire suspension bridge, consisting of a heavy wire cable to which is fastened a wooden frame or chair. The person essaying to cross takes a position in the chair and pulls himself to the other side. This bridge gives the present name to the town. It was formerly called Oroina, or "Place of Little Gold," because a priest found and worked a gold discovery there which did not pan out well. Before the coming of the railroad, the town was on the opposite bank of the Mantaro and was called Chacapata. The clusters of houses on both sides of the river are now called by the one name of Oroya.

San Florenza mine, three miles from Galera, on the Oroya Railroad, is at an elevation of 16,000 feet and has a ventilation shaft which runs through a glacier for two hundred and thirty feet. The blue walls where light can show an effect are grottoesque.

At Chacapalpa, about twenty miles from

Oroya, may be seen one of the ethnic curiosities of South America. Here lives a tribe of Indians or natives, the members of which are fair, often having blue eyes and red hair, and the men have long beards. In every way except habits of life they quite closely resemble the Caucasians.

Jauja, 11,874 feet, thirty miles south of Tarma and fifty miles from Oroya, isolated in the Andean fastnesses as it is, is a great resort for consumptives and bronchials. A new sanitarium is talked of.

The Mantaro River, on which Oroya is situated, heads in Lake Junin and flows into the Rio Perene, which empties into the Amazon. The Mantaro and Yauli Rivers unite near Oroya.

Lake Junin, or officially Laguna de Chin-chaycocha O' de Junin, in the department of Junin of the province of Tarma, is probably the highest navigated lake in the world. Its altitude is 4093.71 metres. Lake Titicaca, commonly referred to as the highest navigated lake in the world, is at an elevation of 3835 metres. Lake Junin is twenty-seven miles long and ten miles wide. Its depth is great. At least one steamer plies upon its cloudlike bosom, and there are numerous other boats in use by the natives who live around the shores. Oroya is about twenty-five miles from Lake Junin.

Lake Titicaca, the queen of the Andes and one of the largest lakes in South America, lies in

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Bolivia at an elevation of 3835 metres, or about 12,645 feet. It is one hundred and eighty miles long and is navigable for one hundred and five miles. At the place of greatest breadth it is fifty miles across, but the average width is less than twenty miles. Full of islands and shoals, it requires much skill to navigate. It is also subject to violent and dangerous squalls. There are good steamers plying upon it. Its outlet is still veiled in uncertainty.

It is claimed that a skeleton in the cathedral at Lima is that of Pizarro. The cathedral also claims a genuine Murillo. One may be as likely as the other. There is much to interest one in Lima and it is an attractive and well-kept city. One of the most creditable possessions is the public museum. Dr. Max Uhle, an able adopted German, is the director. He is an archæologist of deserved fame and an authority upon Incan lore. Dr. Uhle has no one about him who is not gentle and obliging, but none more so than Manuel Carlin. Señor Carlin opened the museum on a day when it was closed to the public and permitted us to spend as much time within its walls as we could spare. When the hour to depart came, the polite attendant could not be induced to accept the gratuity which was pressed upon him. The rare character of Dr. Uhle has permeated everybody and everything about the museum.

The Lima museum is in many respects the finest in South America and it has the best Incan collection in the world, covering everything enduring that entered into the mysterious civilization of Manco Capac and his people. There are sitting mummies, *huacos* of every description, utensils, feather headdresses and garments, shrunken Jibaro heads, and a wide range of articles in use by native tribes of the present and the past. The practice of certain Amazonian Indians of shrinking and mummifying the heads of enemies and captives, preserving them so perfectly in miniature as often to be recognizable, is one of the most weird of savage customs. Just what the process is has not been clearly discovered. The head is subjected to some acid treatment that removes the flesh without affecting the skin except to shrink it in conformity to the shrinking of the bones of the skull. Everything becomes a miniature except the hair, and the result is a shocking sight. Missionaries who have gone among these Indians have been murdered and their heads treated to the shrinking process of preservation. Afterwards other missionaries who had known the unfortunates in their lifetime have seen the hideous miniature mummy, only to recognize some long-lost friend. A number of these heads most perfectly done are on exhibition in the Lima museum.

The art gallery of the museum contains much

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work that shows the artistic growth of the country, and some of it possesses high merit. Merino was Peru's greatest artist, and it may not be too much to say that South America as a whole has never produced a man of higher genius. Merino was born in Piura. He developed himself in Europe and died at an untimely age in France. As it was, his work covered a wide range and received cordial recognition by the most exacting European critics. Merino had the temperamental qualities of the true artist and adhered to his ideas tenaciously. He refused to paint for money and is said never to have sold a picture. His entire collection was bequeathed to his native country and is hung in the museum.

"The Death of Atahualpa," by Montero, also a Peruvian artist, is a large and pretentious canvas of real interest, but poor execution.

There is much for both student and traveller in the museum of Lima and the arrangement of everything is perfect.

Much has been said about the chances for mining investments and about the opportunities for fortunes for persons in all walks of life in South America. Peru has been a Mecca for fortune hunters ever since the days of the courageous ruffian, Pizarro. But where one person has been successful, thousands have failed, and the percentage of failures in South America has

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been higher even than in Australia, leaving the fact beyond successful dispute that the best chances in the world are in the United States and its bordering neighbors, Canada and Mexico. Compare, for instance, the investments and operations of the Hoatson, Cole, Ryan, Clark, and others in the copper mining region about Bisbee, Arizona, with the undertakings of Frick, Haggin, Pierpont Morgan, H. McK. Twombly, and others in the Cerro de Pasco district, sixty-four miles from Oroya in Peru. In the case of the former, the profits began as soon as properties were fairly opened and ready for production. In the latter case there has been an investment of more than twenty million dollars United States gold, with disappointments crowding failures and not one cent of profit yet. These instances are fairly comparable because they are both copper regions and all the men behind the activities are among the keenest in the commercial world. Those who stayed at home made money; those who were attracted to the green pastures of the distance have found them a mirage so far, with no certain prospect of success at any time in the future, although the latest management at the mines can be classed with the best in the world.

The chief operating concern at Cerro de Pasco is the American Mining Company, of which R. H. Channing, a brother of the somewhat better

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known J. Parke Channing, is the new manager installed early in 1907. There has been trouble in the company and much dissatisfaction, until now the multi-millionaires who have put good money after bad have made a sort of last stand in the form of a final herculean attempt to wrest success from what has been a deeply felt failure.

Cerro de Pasco means "Mountain of Peace," but it has not been that to the American Mining Company investors. A. W. McCune was the promoter and manager, and the company was organized in 1902 with a capital of ten million dollars. Assessments for operation and the purchase of other properties not contemplated at first have just about doubled the amount of the original capital. A. A. Abbott, of Lansing, Michigan, was superintendent of mines, with office at Cerro de Pasco, until the shake-up that brought in new heads. One of the reported causes of the trouble, in addition to a record of failure, is that a prominent connection of the old management bought the Morocoucha mines, a supposedly most promising acquisition, with money of the American Mining Company, but took the title for the property in his own name as an individual. This is only one of a dozen charges of questionable practice, the foundations for which cannot be determined except through the judicial inquiry which has been instituted.

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The mistakes have been for the most part of a technical nature. It is said electrical power should have been developed instead of putting in a steam plant. On the other hand, the company is supposed to have large measures of high grade bituminous coal only about thirty miles from the mines.

The altitude of the town of Cerro de Pasco as determined by the railroad engineers is 4331 metres, or about 14,076 feet. The mines are at an elevation of 4359 metres, or about 14,166 feet. The Cormayer mine is said to be the best property in the Cerro de Pasco group, and the San Miguel mine the best in the Morocoucha group. Both yield silver and copper, and the copper ore is said to contain from four to fifty per cent in metal, while the silver ore runs from one to one thousand ounces to the ton. Smelters with a capacity of seven hundred and fifty tons a day have been erected, but they have been a failure so far, supposedly owing to lack of boiler capacity, although some metallurgists claim that the elevation and rare atmosphere are to blame. The mining camp contains fifteen thousand souls, but the character of the native labor is not high.

The mines are connected with the Oroya Railroad by sixty-four miles of company railroad terminating at Oroya. This railroad is the highest for its length of any railroad in the world, as

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it is no place at a less elevation than 12,000 feet. It is the best constructed railroad in South America excepting none, and the American equipment is equal to the construction. A concession has been obtained under most favorable conditions for the extension of the Cerro de Pasco railroad to the Ucayali River, at some point near to the head of navigation of this important tributary of the Amazon. Such a road would open up a new region of great mining resources probably, and surely rich in timber and in agricultural possibilities. The distance of an ocean-to-Amazon railroad has been estimated at nine hundred kilometres, starting at a point near Huacho, seventy miles from Callao, and extending to Porta Victoria, on the Ucayali or some other neighboring point of equally certain navigable possibilities. Good engineers, however, contend that the Cerro de Pasco extension can reach through from Cahuamaya, on the present line, to a point of known navigation on the Ucayali, in two hundred and fifty miles, which is likely to be the case. Trial lines can scarcely be said to have been run and the country intervening is not much known of in detail. The American Mining Company is trying to find out whether it has this concession or whether it is controlled by the management recently de-throned. Such a railroad would offer some advantages in getting the Cerro de Pasco product

to market if there ever is any, but not much over the Panama Canal route.

Silver was discovered in Cerro de Pasco in 1630. The production of the district up to the close of the last century was four hundred and fifty million ounces, obtained from forty million tons of ore, nearly all taken out by hand labor and carried on llamas several miles to primitive smelters. After treatment the bullion product was carried to Lima on llamas, a distance of over one hundred and fifty miles, by the mountain trail. This was only discontinued in the last seventies at the completion of the Oroya Railroad. Even then the llamas transported the ore for nearly seventy miles until the Cerro de Pasco railroad was built. Authorities do not agree as to the geology of the region. In a small area, not much more than one mile long and two miles wide, there is ore of varying value nearly everywhere. The old mines were not operated below two hundred feet, and there is no certainty that the ores continue with depth. At least it is admitted that the ores grow leaner with depth and there is no proof yet that the old operators left much; in any event they seem to have skimmed the cream.

Henry Meiggs sought to develop the property with a long tunnel, but he died before its completion, although it had been driven for a thousand feet. Meiggs had a concession from the

Peruvian government for twenty-five per cent of the gross output of all mines drained by this tunnel. A succeeding company still has this concession and has driven the tunnel several hundred feet further. There is chance for litigation between this company and the American Mining Company. The situation is apt to develop another burden for the already heavily laden latter company. Authorities say that the Cerro de Pasco's modern development is the most costly in copper mine exploitation in the history of the world, and none of the work has been done out of profits. A creditable thing about it is that Morgan, Frick, Haggin, and their associates have not taken in the public. The loss up to date is their loss, and if there be profit, and we hope there will be, it will be theirs too.

The Peruvian Mining, Smelting, and Refining Company, also an American company, seems to have had better luck than the American Mining Company, probably due to the management of E. M. Wiltsee.

It is estimated that at the present time Americans have invested two hundred and fifty million dollars gold in mines and mining ventures in Peru alone. Huge sums have been invested in other South American countries. All of this money could have been invested at home to better purpose in every way.

Peru and Colombia are the only countries of

South America that have ports on both of the oceans, or ports accessible to both. One of the most important cities in Peru is Iquitos, near the head of Amazonian navigation. The trip from Lima to Iquitos may be made very comfortably in one month. Compared with the old overland trail across the Western plains the continent-crossing in Peru is easy. The route is as follows: Lima to Oroya, one day by rail; Oroya to Tarma, one day by horse or mule; Tarma to La Merced, two days by horse or mule; La Merced to Porta Bermudas, the latter on the small Rio Pichis, five days by horse or mule; Porta Bermudas six days down the Rio Pichis by canoe, or by launch in season of high water, to the Rio Patchitea and down the Rio Patchitea to Macisea, where the Patchitea joins the great Rio Ucayali (in all, six days from Porta Bermudas to the Ucayali); ten days by *balsa* (raft), canoe, or steamer down the Ucayali to Iquitos. This interesting place has a population of fifteen thousand and is growing rapidly. The Booth Line operates regular steamers to Europe from Iquitos and there are other steamers for foreign ports. One may go from Iquitos to Europe in thirty-five days without change of ship. There is continual talk of a transcontinental railroad from Iquitos to some Pacific port in Peru. One of the routes most discussed is by way of Macisea.

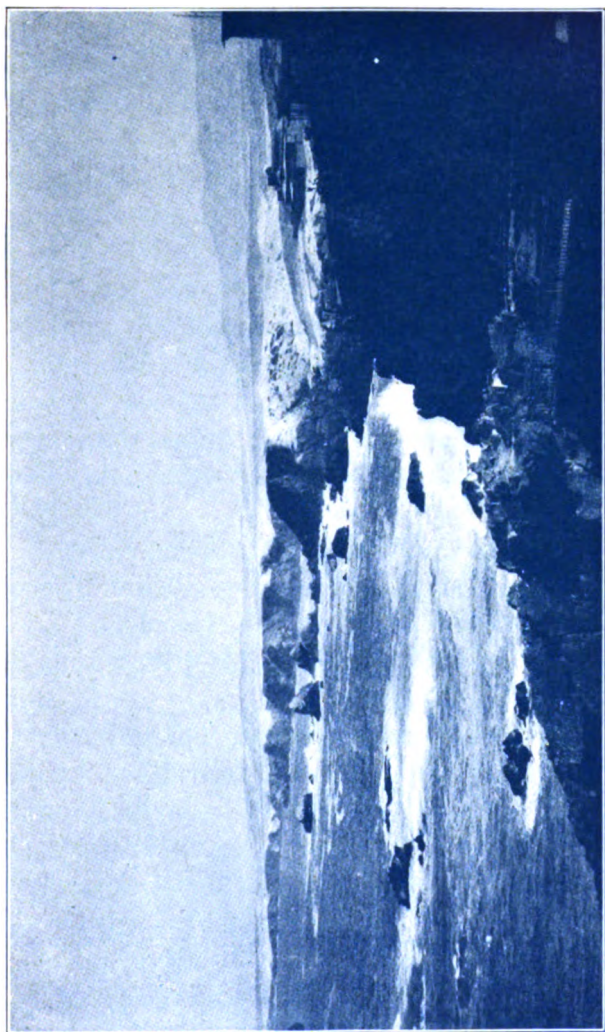
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Chile has very few protected seaports, either artificial or natural, and not one on the northern or north central coast. An effort is always making for new ports and for public improvements that will make the old ports better, but really very little seems to be done. Among the late propositions is one to build a port at Quintero, about forty kilometres north of Valparaiso and about thirty kilometres nearer Santiago than Valparaiso is. The claim is made that Quintero not only has a better harbor and is nearer to Santiago, but that it is practically outside of the earthquake zone and offers a perfect site for a city. The hope of the promoters is that the new town will deflect the sea trade which has been done at Valparaiso for nearly two centuries.

It is claimed that a good harbor will be afforded at the new Chilean port of Mejillones, about sixty miles north of Antofagasta, upon which considerable work had been done by the government in 1907. It is expected that Mejillones will be a great Bolivian outlet and also a nitrate port of first importance. Just how much of the scheme is speculation remains to be seen. Mejillones is marked from the sea by a most unusual bluff about one thousand feet high, and so covered with guano as to look as though it had been painted white. It is a spectacular landmark and may be of no small service if the port becomes a busy one.

Mollendo, Peru, the port for Cuzco and Arequipa, is probably the wildest of the open roadsteads on the entire western coast of South America and it is the second port of Peru, coming only after Callao. The surf billows roll from twenty to forty feet in height, and the storms of spray dash hundreds of feet, often with fascinating effect. Yet from this port there are large shipments of alpaca and sheep's wool, skins, coca leaves, medicinal barks, silver, tin, and copper ores, and other commodities. Persons are taken out of or loaded into boats with the aid of a chair suspended to the arm of a locomotive crane. When the boat bobs up and down, the chair is caught on the fly and held bobbing with the boat until the crane with a sudden lift swings it and occupant free in a manner not lacking in exhilaration. Shipments are handled in the same way. The west coast suggests by its nature that most of it was never intended to be landed upon.

South America not only has the highest railroad in the world, but possesses also the longest-narrowest. This railroad has a gauge of only thirty inches and a length of five hundred and seventy miles, connecting Antofagasta and Oruro, Bolivia. Trains leave Antofagasta three times a week and arrive three times a week. Really comfortable sleeping cars are operated. The traveller to Oruro is enabled to see and get a



THE COAST AT MOLLEND, PERU

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good idea of much of the country. The railroad passes through the nitrate fields, and touches the Caracoles, Inca, Loa, San Cristoval, Potosi, Huanchaca, and Colquechaca silver mines; the Lomas, Bayos, Conchicul, and Aralar copper mines. The valley of the Loa was the heart of the Inca country and is particularly rich in ruins. Three active volcanoes, San Pedro, San Pablo, and Ollagua are to be seen from the railroad, which also passes near to the high table-land lakes, Ascotan and Carcot. Railroad service is also given to the sulphur mines and borate deposits of Ascotan, the tin mines of Oruro, and the bismuth mines of Lipez.

One may coach from Oruro through Sucre and the well known mining district of Colquechaca to La Paz easily in four days. Huanchaca has exported nearly six million ounces of silver in a single year.

Following are the important stations on the railroad, with distances in miles from Antofagasta: Cuevitos, 51; Salinas, 80; S. Gorda, 106; Calama, 149; Conchi, 187; Ascotan, 225; Ollagua, 272; Julaca, 322; Uyuni (Huanchaca), 381; Oruro, 570 miles.

Mollendo is the port for Cuzco, Arequipa, La Paz and many other Bolivian towns. The Arequipa River enters the sea through a hidden mouth near Mollendo after having pursued its

course underground for one hundred and seventy kilometres. The fresh water supply is a serious question for all towns along the rainless coast from Coquimbo north. Many towns are supplied by distillation plants that freshen the sea water. Mollendo secures fresh water from the Arequipa River through an eight-inch pipe laid for a distance of one hundred and seventy kilometres, or about one hundred and thirteen miles. About ten miles to the north of Mollendo is the deserted town of Old Mollendo, the ruins of which are not inspiring.

There has been a great boom in Bolivian tin mines and prospects as well, but it flattened out with the advent of the world's financial depression in the Autumn of 1907. The Bolivian tin craze had a substantial basis, but the foundation was too weak for the speculative superstructure. An American investor told us of one tin mine that was offered to him for fifty-five thousand pounds. He made a counter offer of twenty thousand pounds, which he thought was liberal and all the property was legitimately worth to operate. The boom came on, and the same mine, unchanged in development or prospects, sold for two hundred and fifty thousand pounds to a person who in turn promoted a company and unloaded the mine at three hundred and fifty thousand pounds. Just before the crash in 1907 the shares of the company were

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selling in the public market at a price that figured up nearly one million pounds for the mine. There had been a speculative increase, mostly fictitious, from one hundred thousand dollars to five million dollars. This is only one instance of many similar performances.

The world's production of tin is about ninety thousand tons. During the tin boom the price went from \$450 to \$1075 a ton, and held up to 188 pounds a ton well into 1907. The tin mines of Bolivia produce about eighteen thousand tons annually, and most of this is the output of ten mines. Of the tin of the world, nearly one-half, or at least forty-eight per cent, is produced by the Straits Settlements mines. The other principal producers in addition to Bolivia are Cornwall and Australia, so it will be seen that there is no clear prospect of Bolivia controlling the tin supply of the world.

The Bolivian tin ores run about sixty-six per cent in metal. Physically, it is possible for ores to contain as much as seventy-eight per cent of tin, and the Straits Settlements tin ore runs seventy-two per cent. All of the tin in Bolivia is found at a great altitude, the highest mine being at an elevation of 17,600 feet. One American company prospected for four months at an elevation of 18,800 feet. These tin ores are cassiteritic and are found in a granite and porphyry formation and are known to extend to

a depth of fourteen hundred feet. The ore formation is most uncertain and stockworky, and the estimate of the value of a tin mine is very little more than a guess as there are practically never any reserves that can be measured. The tin mines that produce most of the Bolivian tin ore are said to be rapidly mining out. The capital invested in Bolivian tin was furnished mostly by Americans, English, Germans, and Chileans, with the last two leading. It is said that Chile has over fifty million dollars invested in the tin region and that a happy *rapprochement* of the countries is being brought about as a result.

The coffee and rubber districts of Peru are all on the eastern slope of the Andes. The coffee region may be said to start at Chinchamayo. Rubber and *caucho* trees are found along the tributaries of the Amazon and there are vast forests as yet untouched.

A reference to one operation will give the reader some idea of the methods of rubber companies. The Inca Rubber and Mining Company, of Bradford, Pennsylvania, has a concession from the Peruvian government for the construction of a wagon road for two hundred and fifty miles over the Andes to the Madre de Dios River to connect with a railroad to the Pacific coast via Arequipa. The wagon road starts at Tira-pata, a point on the Mollendo-Arequipa-Puno

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railroad, sixty-seven kilometres from Juliaca and between Juliaca and Sicuani. Juliaca may be located as a junction point between Arequipa and Puno, one hundred and eighty-nine miles or about six hours from Arequipa, where a branch line starts for Sicuani, one hundred and twenty-two miles distant on the route to Cuzco. The headquarters of the Inca Company in 1907 were at Comiseria Maldonada, a guarded Peruvian frontier customs post where the Rio Tambopata empties into the Madre de Dios. At places the Inca wagon road will reach an altitude of over 18,000 feet. The constructing company *concessionaires* get every alternate parcel of land for four kilometres, or two and two-thirds miles, on either side of the wagon road, or all the land may be selected on one side of the road in the rubber region. They are said to have made selections already on the Madre de Dios River and tributaries for nine hundred miles. Most of the rubber in this section is *caucho*, an inferior grade, worth in 1907 ninety cents gold a pound in the market, while good rubber was worth one dollar and twenty cents a pound. The company pays the rubber gatherer thirty cents gold a pound delivered at its camp. In 1907 the company had five hundred thousand pounds of *caucho* (from Cauchu) on hand awaiting a chance to get it out to market. Most of this rubber was at headquarters camp at

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Maldonada, which is a sixteen days' journey by mule pack team from the railroad, with the trail above the clouds for much of the way. Maldonada is about two hundred miles almost straight north of Lake Titicaca. Over the trail to Maldonada, which rises to 18,000 feet, the Inca Company carries everything. Included among the outfit packed over this mountain trail is a steel boat one hundred and ten feet long.

The rubber tree or *jebe* is tall and symmetrical, and the *caucho* tree is still taller. The trunk of the tree grows to a diameter of four feet and the trees tapped for rubber will average two feet in diameter. The taking of the *caucho* is sure death to the tree as it is cut down. The gatherer bleeds the roots and girdles the fallen trunk, cutting through the thick bark every two feet. One tree will often yield seventy-five pounds of *caucho*, and one man will harvest one hundred trees in a season from May to November, the Winter or dry time, during which he will gather on an average twenty-five hundred pounds. The true rubber tree on the Amazon yields about six pounds a year and has an indefinite life if tapped carefully. The *caucho* man or *cauchero* fells the tree with a light, long, and narrow-bladed axe known as a Brazil axe.

The Inca Company had one hundred and

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fifty Japanese at work in 1907 and wanted five hundred more. A peon had a selling value at the time at Maldonada of twenty-five hundred soles, or about \$1250. The workmen eat *challona* — smoked mutton — and rice. Sometimes they have sugar and flour. They pay \$1.25 a pound for everything they consume. Mechanics are paid fourteen soles a day. Common labor wages run through a wide scale, depending on whether the laborer is a peon, who gets just enough to keep him in debt to his employer all the time, or what contract has been made, which applies mostly to the Japanese.

Caucho trees grow well at an elevation of one thousand feet and rubber trees at three thousand feet. Maldonada is thirteen hundred feet. Rubber is gathered in tin cups and is smoked with *pono* nut to keep it from evaporating. The *caucho* falls on the ground on leaves placed to catch it as it exudes. It loses much by evaporation and other waste and is not clean.

There is a great deal of *terciana* (fever) and the natives drink all of the fiery *cañasa* they can get. They have a way of making waterproof garments by just smearing rubber on cheap cloth, which makes a crude but useful covering. The region is frightfully rough and wild and remote. A sole is the least piece of money to be seen, and one workman expressed all of his misery in the

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statement that beer was seven soles a bottle. A few months there usually suffice to charge a man with more malaria than he can get rid of during his lifetime. In the rainy season it is wet from rain, and in the "dry" season it is wet from dew, so it is never dry.

In 1907 there was a Harvard University expedition at Maldonada for the purpose of studying the native Amazonian and Andean tribes. Dr. Farrabee was in charge. Special attention was being given to the Guaraya or Chunchu Indians, a tribe said to have many Mongolian characteristics, even to being slant-eyed.

The native tribes, many of them entirely unmixed with whites, are far more numerous in South America to-day than the Indian population of North America when Columbus arrived. That may be taken as an evidence that South America is a paradise for the wild and lazy man, while North America is suited to the tame and industrious man. Bolivia teems with aborigines. There are 200,000 natives tributary to La Paz alone.

On the east slope of the Andes in Peru Indian tribes are numerous, including the Campas, Camaticas, Catongas, Caschibos, Piros, Remos, Amahuacas y Sacuyas, Nahuas, Sirineiris, and many more about which little is known. It is believed that there are many tribes which have

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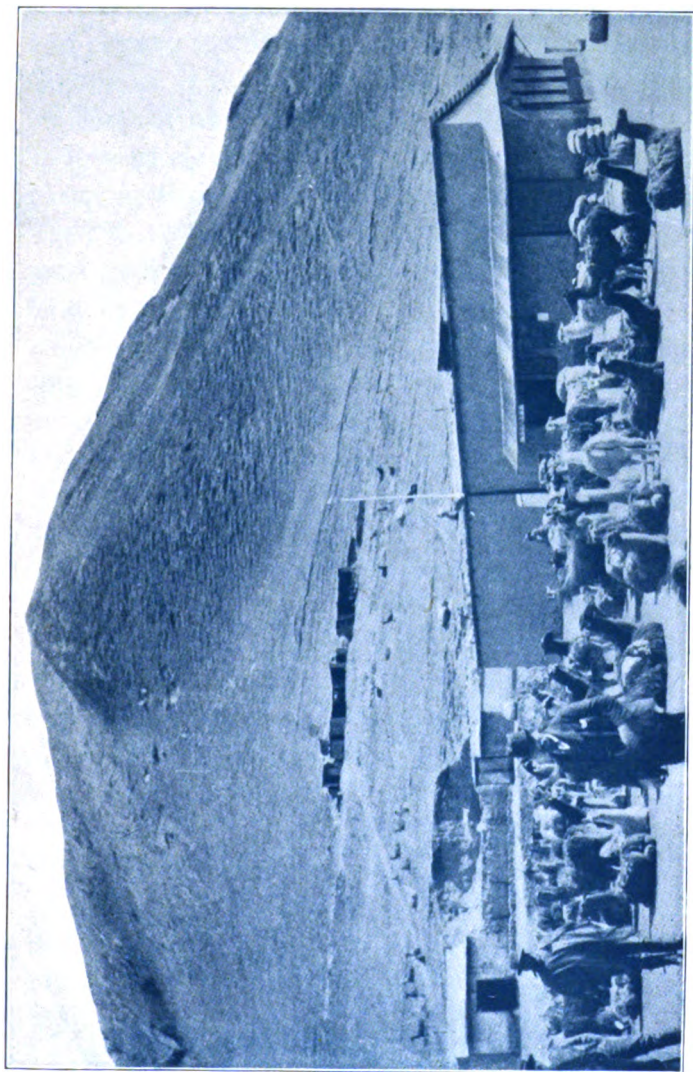
not seen or been seen by a white man. Some of the tribes are pipers and have musical reeds not dissimilar to those used up to the present day by certain peasants of Sicily, and which are thought to be the true syrinx or shepherd's flute invented by Pan according to the myths of the Greeks. The Romans as well gave credit to a god of the flocks and pastures, first to Inuus and then to Faunus quite impartially. And these primitive Andeans also have such a deity to whom they blow great blasts from their Pandean pipes, as they call their llamas.

Some of the natives in the higher altitudes live in caves and others in stone huts with grass roofs. Of all statures, some of the higher Andeans are as squat as the Lapps and do not look unlike them. As a general thing the Andean Indian looks healthy, man, woman, and child, and their endurance is phenomenal. With nothing to eat but coca leaves and lime juice, they will carry a load of a hundred pounds over the dizzy trails and go a fortnight without other food. They not infrequently live to be a hundred years old, and the fact that they begin to chew coca leaves in infancy seems to aid longevity rather than to hinder it.

The Harvard expedition under Dr. Farrabee is said to be doing good work and will be able to throw much new light on the Andean aborigine. The work is financed by John de Grenan de

Milhau, and in addition to Dr. Farrabee and Mr. Milhau the party includes Dr. Horr and J. W. Hastings. The latter has already written a semi-scientific book and is collecting more data. Milhau and Hastings are young men. They expect to remain in the Andean wilds for a year, while Farrabee and Horr expect to remain two years. Their greatest danger is from snakes and malaria, besides which there are many forms of hardship to surmount which require a highly developed courage, a perfect physique, and endless sacrifice. The party arrived at the confluence of the Tambopata and Madre de Dios Rivers, at the end of March, 1907, in good health. They had been living on monkeys, parrots, peccaries, a kind of small mountain deer, some wretched canned stuff, and fairly good beans.

The llama sustains much the same relation to the Andean native that the reindeer does to the Lapp, — milk and flesh for food, hair for cloth, skin for garments, sinews for thread, bones for utensils, and so on. The independence and usefulness of the llama probably surpasses that of the reindeer. It can go a week without food or drink with no serious injury, and can carry more of a burden and forage for itself while at work. The llama is willing to bear a load of about a quintal, forty-six kilos, or a hundred pounds. If more is put upon it than the animal can comfortably carry and pick its food as it



LLAMAS AT CASA PALCA

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goes along the mountain trails, past cliff, cataract, and chasm, it will simply lie down and no beating can make it budge until the load is reduced to its ideas of its own capacity. They can work at as low an elevation as two thousand feet, but are better at three thousand feet and from that upward to any height. The Inca Rubber Company management tried llamas at fifteen hundred feet, but they all died.

One will see the patient creatures, surely the ship of the mountain if the camel is of the desert, picking their way carefully over craggy ledges and steep mountain sides, balancing their bodies and burdens at the most nerve-trying angles to the eye of the beholder. Some are perfectly black and have pretty little white kids, while others are white and have black baby llamas following, looking cute enough and always winning praise and sympathy. Monsenhor Lustoza claims they always look toward heaven, but the Monsenhor was so zealous that he would have every condor and every puma and every llama a good Roman Catholic. There are times when the llama shows anger and some few are vicious. Such llamas have the disagreeable and really dangerous spitting habit more common to their cousin the guanaco, referred to elsewhere. By some the saliva of the llama is believed to be more disagreeable than that of the guanaco, but the old stories about this secretion being

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deadly are not true; it is no more than mildly poisonous.

The flocks of llamas or Peruvian sheep of the ancients were appropriated by the primitive Andeans exclusively to the Sun and to the Incas. Their number was immense. They were scattered over the different Incan provinces of the country, where they were intrusted to the care of experienced shepherds, who conducted them to the different pastures up or down the mountains, according to the change of season, just as the Lapp drives the reindeer from valley to mountain. A large number was every year sent to Cuzco for the consumption of the court and for the religious festivals and sacrifices. But these were only the males, as no females were allowed to be killed. The regulations for the care and breeding of these flocks were prescribed with the greatest minuteness. At the appointed season all were sheared and the wool was deposited in public magazines, and dealt out to each family in such quantities as sufficed for its wants or as was its share. Such was the community idea of the Incas and it was carried out successfully in all directions.

Most of the known nitrate of soda or saltpetre, or as raw called *caliche* and as refined called *salitre* in Chile, in the world, exists in the state of Tarapaca, formerly Peruvian territory, but since the war between Peru and Chile incorporated by the latter country. The business of

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mining and shipping it is carried on by *officinas*, as the companies are called in Tarapaca. The saltpetre region looks like a section of country that is covered with snow which has been partially melted, leaving a splotchy landscape of white and brown and black, only still more sombre and deathlike than any snowfield could look where anything had ever grown or would ever grow again. There are wide areas of the valuable substance with an over-burden of sand or other foreign material two to four feet deep, and then the saltpetre beds which lie perfectly flat and blanketlike, not unlike the iron ores on the Mesaba Range in Minnesota, or still more closely resembling the flat, thin lenses of iron ore on the Felch Mountain or Metropolitan Range of the Upper Peninsula of Michigan.

No one endeavors to account for the occurrence of these marvellous beds by anything more than guesswork. One investigator surmises that they may have been deposited in some manner from the air; another suggests that the ancient ocean bed here was unusually rich in seaweeds, all of which disappeared in time except their nitrogenous parts. Both of these guesses are in discord with the more generally accepted theory that saltpetre is for the most part a product continually formed by the action of atmospheric oxygen upon nitrogenous organic matter in the presence of bases.

Ochsenius, a German geologist, thinks the nitrate beds may have had the same origin as the guano deposits. He contends that there was more bird life in the geological period immediately preceding the present, and that there were larger roosts and greater migrations. The nitrate area furnishes lacustral evidences, making it possible that the region was a feeding and living ground for billions of birds for æons, and of birds of all kinds from the pterodactyl, the monster flying reptile, to the diminutive tern. Their excrement may have furnished the foundation, guesses Ochsenius, but Dr. Koenig, of the Michigan College of Mines, says if this were true there should be phosphates in the nitrate beds.

During the Napoleonic wars nitre for powder was obtained from the earth floor of stables, which is still a source in use in Sweden. In India soil rich in humus is piled into heaps. A crude system of pipes distributes animal urine over the heap, and then wood ashes are sprinkled on to supply the potassium necessary. The result is the appearance of a white nitre film which is carefully and regularly removed by scraping. That these and other slow and expensive processes are or even have been resorted to, indicates the value of Chile's great beds of soda nitre, which not only supply the finer chemical needs, but make it possible to enrich many acres of land to a condition of high production.

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The Tarapaca product will probably average fifty per cent pure. The purifying of it brings it up to ninety-two to ninety-seven per cent, and is a process of lixiviation with boiling water, concentration, and crystallization, until the refined product could easily be mistaken for granulated sugar.

As is well known, the uses of saltpetre are for a fertilizer, for the manufacture of gunpowder, and a small quantity in medicine, as a preservative, in fireworks and matches, and in fire extinguishers.

Chile's saltpetre output is probably worth more than all of the other minerals produced in South America; at least, it is very valuable. The nitrate region proper is confined to an area of 89,000 hectares, or 219,919 acres, and is estimated (1905) to contain 2316 millions of metrical quintals, or 231,600,000 tons of saltpetre suitable for commerce. For the five years previous to 1905, the output has averaged 1,300,000 tons a year, and an average of 20,000 laborers had employment in the industry. From 1877 to 1902, the product amounted to a value of over \$400,000,000 in gold. The exportation for 1901 was valued at \$46,000,000, and Chile received a royalty or export tax that year of \$18,000,000. The value of the saltpetre deposits still owned by the government is estimated to be only \$3,000,000; all of the others are owned

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by private companies, most of which are foreign. The production has increased from year to year, and no attempt was made to regulate the supply so as not to gorge the market until recently, when a combination for this purpose was formed with government consent. The output in 1884 was 550,000 tons, increasing yearly until the shipments in 1902 were 1,333,000 tons.

It is believed that there is a supply for the next fifty years, by which time nitrates from the air will probably supply the deficiency, as it is reported from Norway that chemists there are already extracting enough to supply that country and leave a small surplus for export. Or, as Navicow predicts, if the nutritive qualities of minerals come to be extracted, the tilling of the ground will be less necessary, saltpetre will not be needed as a fertilizer, and farming will only be for pastime as floriculture is now conducted.

Chile has obtained \$280,000,000 from saltpetre in twenty-four years. It is estimated by Francisco Valdez Vergara that the government income from that source in the next twenty years will be \$450,000,000, by which time Mr. Vergara figures that the deposits will have been exhausted, in which he disagrees with those who calculate a life of fifty years.

There are wise men in Chile who would like to see a non-export law passed, so that the country's resource in saltpetre might be conserved for

use at home, where many of the lands need irrigation to be productive, and where the impoverishment of the soil is so rapid as to present a serious problem, demanding in time a need for all the help nature has loaned by the formation of the nitrate deposits. Other countries than Chile have a suicidal shortcoming in refusing to look into the future or prepare for it in any way, seeming to prefer a policy of "the devil for the hindmost."

The United States Steel Corporation has its eye on South America, evidently, for its chief geologist, Mr. W. N. Merriam, of Duluth, has just completed a tour of Chile and some of the other west coast countries. Mr. Merriam is one of the most capable mining engineers in the United States, as his high position would indicate. He gave particular attention to the manganese deposits along the Chilean coast, and investigated in a general way the probable iron ore resources of western South America. Mr. Merriam also went to Bolivia and Peru, visiting the tin district in the former and Cerro de Pasco in the latter country, as well as covering much additional ground. He is a thorough observer, and a book from him upon the economic geology of South America would possess much more than usual value.

CHAPTER XV

WEST COAST CITIES

The Chilean Coast—Island of Chiloe—German Colonists in Chile—Valdivia—Lebu—Lota—Coronel—Talcahuano—Penco—Concepcion—Santiago—Woollen Ponchos of Talca—Quillota, the Ancient Capital—Limache—Coquimbo—La Serena—Guayacan—Ovalle—Guano Islands—The Rainless Coast—Tantalus Clouds float over the Desert—Huasco and Other Towns—Caldera and Copiapo—Inca Mining Methods—Taltal—Difficulties of Procuring Fresh Water Supplies—Antofagasta—Murderous Fleteros—Sea Lions in Port—Minerals of All Kinds—Borate of Lime—Tocopilla—Iquique—Greatest Nitrate Deposits in the World—Pisagua—Arica and Tacna—A Problem of Chile and Peru—Coca Leaves and Their Marvellous Toxic Properties—Chuno—Customs of Andean Natives—Sea Birds Feeding at Arica.

THE Chilean coast line is nearly three thousand miles long, covering a great variety of conditions and landscapes. From Cape Horn to forty-two degrees south latitude, there is a series of remarkable archipelagoes, composed of thousands of islands, and including Chiloe, Chonas, Taytao, and Magellanic groups. The most important of all these islands is Chiloe, of

which San Carlos de Ancud, with a population of about four thousand, and three English churches, is the capital, and Puerto Montt, named for the Montt family, nearly the same size, is the leading port. Chiloe is eighty miles long, north and south, has a mean elevation of 2000 feet, an area of 8592 square miles, and a population of 77,750. The fine and prosperous German colony on Lake Llanquihue, on the mainland, north of Chiloe, is fifteen miles from Puerto Montt, which place serves as its outlet to the sea. The climate of Chiloe is bracing and healthful, and the Germans are thriving in every way.

At Valdivia, one hundred and ten miles north, is a still more important settlement of Germans, in fact, the leading German colony of Chile. Valdivia is four miles up the Valdivia River near the mouth of the Rio Cruces. Its seaport is Corral, although during the spring high tides vessels drawing eleven feet may reach Valdivia. Huge "launches" or decked scows of one hundred tons burden, manned by sweeps or towed by small power boats, handle the important volume of business from the sea. Valdivia has a population of about twelve thousand and boasts the largest brewery in Chile. The town is growing, and as it is surrounded by much valuable raw material, especially in timber, it will become a place of still greater importance.

Even now there are three furniture factories and several other industrial establishments. Valdivia is expected to be the scene of Chile's iron making and large mills are projected, with what certainty of success cannot yet be determined, even with the apparent willingness to grant generous government aid.

The next coast town of importance to the north is Lebu, which is at the beginning of the coal region. A good agricultural district is tributary and there are forest products, including a great quantity of tan bark, which is largely exported. This main town and capital of the province of Lebu lies near the port at the mouth of Rio Lebu and has a population given variously at from four thousand to ten thousand, with the usual uncertainty of South American censuses and other statistics.

Fifty miles further north is Lota, and five miles further is Coronel. At Lota are the beautiful grounds and gardens of the Cousino family, whose name attaches also to the best park at Santiago. Coronel has been called the "Newcastle of Chile," although there is no further resemblance than that it is the leading coal port, with a growing fueling trade. It has the largest tonnage of Chile, and its foreign tonnage is only second to Valparaiso and Coquimbo. There is a population of six thousand, with tannery, glass works, and some other manufacturing.



TALCAHUANO, CHILE

Up the coast forty miles is Talcahuano, the seaport of the fine city of Concepcion, and near by is Penco on Concepcion Bay, which is the site of Old Concepcion, completely destroyed by the fearful earthquake of 1835. At Penco is a sugar refinery and distillery, and near it are the Cerro Verde coal mines.

Concepcion is some eight miles from Talcahuano, with connections of both steam and electric roads. The latter was completed in 1907 by an American-English company. The distance from the mouth of the Biobio River in Arauco Bay to Concepcion is six miles. The banks of the Biobio are too high to permit of easy use of the river. The population of Concepcion is 49,227, and there is rail connection with Santiago, Valparaiso, and into the coal district. In this vicinity occurred many memorable conflicts between the Spaniards and the unconquerable Araucanians.

There are drydocks, one of which is six hundred and fifty-six feet long and seventy feet wide, and breakwaters at Talcahuano, which is a naval station. Quiriquina Island forms some protection. The population of Talcahuano is given at twenty thousand. Santiago is three hundred and sixty-two miles by rail, and Valparaiso four hundred and seventy-four miles by rail, and two hundred and forty miles by sea from Talcahuano.

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Tomé, with a population of 6130, is also on Talcahuano Bay. It is a minor port for Concepcion and is a great wine centre. There are a sugar refinery, brewery, flour mill, and distillery, beside three coal mines, at Tomé.

Constitucion, department of Talca, on the Maule River, about a mile from its mouth, where unfortunately there is a sand bar that keeps out vessels of over one thousand tons, is a nice town of 6322 people, but it is not as prosperous as it would be if the Maule were cleaned out. Small craft navigate the Maule for seventy-five miles.

Talca, capital of the department, fifty-four miles from Constitucion on a branch line, has a population of 39,112. The woollen ponchos made at Talca are noted throughout Chile for durability, texture, and fine coloring.

Cauquenes Springs, fifty-five miles south of Santiago, is a watering place much visited, with good Kurhaus and water that is said to have high virtue.

Another pleasant trip from Santiago is to San Felipe, capital of Aconcagua, seventy-eight miles by rail; population, 11,583. There are many vineyards and orchards and the section is one of much tilth.

Quillota, the ancient capital of Chile, is forty miles from Valparaiso, and in the same department. It has a population of 9861, and near at

hand are some of the largest vineyards of the country. There are also deposits of good limestone and some cement is made.

One would be interested in a short stay at Limache, twenty-eight miles from Valparaiso, on the way to Santiago. There is a cannon foundry and an attractive agricultural surrounding. The famous Pachacama vineyard is traversed by the Santiago-Valparaiso line, between the latter city and Llai Llai.

Vina del Mar, on the sea, is the finest suburb of Valparaiso and the place of residence of many wealthy business men and officials, particularly foreigners. Good sea bathing may be enjoyed.

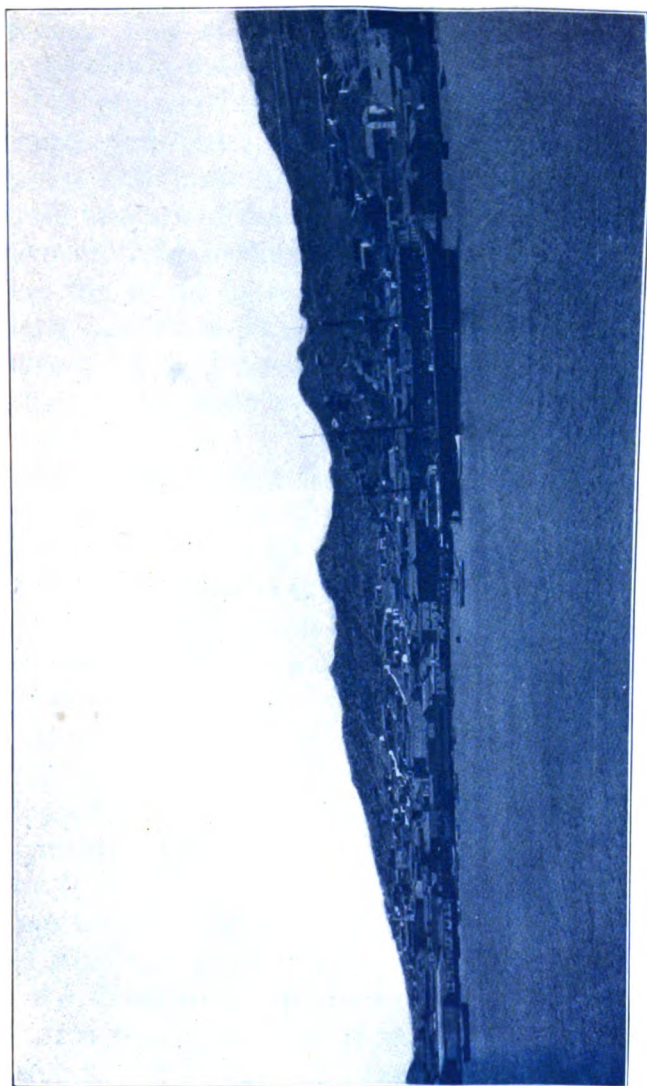
Coquimbo, population 7952, is two hundred miles north of Valparaiso, on the coast, and is the chief port for the rich department of the same name. It is a smelting town, and produces gold, silver, copper, cobalt, quicksilver, galena, manganese, lead, and iron in uncertain quantity. The country about is also rich in agriculture, and Coquimbo ships skins and farm products. American and other foreign mining investors and explorers have been attracted to the region from time to time by the seemingly rich showings.

At Andācallo, a village of less than one thousand persons, some thirty miles from Coquimbo, there is said to be rich placer ground. A great festival in honor of the "Virgin of the Rosary"

is held at Andácallo yearly, and attracts visitors even from Argentina.

Nine miles from Coquimbo by rail (fare sixty cents local money by *treno ordinario*) is La Serena, the capital of the department, with a population of 19,284. Among its industries is the fine Floto brewery, said to be the cleanest in South America. La Serena was founded in 1544 and has been scourged by fire and earthquake several times. It thinks well of its own architecture and possesses a really stately cathedral. The people are generous and hospitable. One very old woman fruit vender, when change was difficult to make, insisted on giving us a number of the *pepina* fruit, in which she was sincere, even if it did secure for her worthy self the silver piece she could not change. The Itata River furnishes a good supply of fresh water. Coquimbo and La Serena, like all other coast towns in Chile, are filthy, and were infested with bubonic plague, which was especially virulent while we were there, in April, 1907.

The Panulcillo copper mines are eighty miles by rail from Coquimbo. Only two miles out of La Serena are the Brillador copper mines and the seignorial estate of the owner. A pretty trip by rail from La Serena is up the Elqui Valley. A visit may be made to the great vineyards, for although this is the northern edge of the grape zone, viticulture has reached a high degree of per-



COQUIMBO, CHILE

fection. One of the notable haciendas devoted to the vine is that of Señor Don Andres Kerr.

The grapes of Chile are of many kinds from France and Italy, and many of them are the largest and most luscious to be found in the world and are of delicate flavor. Chilean wines have received medals at all of the expositions over the world in recent years. The Cousino estate makes a champagne which has some market in the United States and Europe, and is said to be quite as good as the best French product.

Guayacan, with a large copper smelter and the first sulphuric acid plant in Chile, although another is soon to be built at Antofagasta, lies along shore about a mile from Coquimbo. An American company was reported in 1907 to have the copper mines here under option to purchase at five million dollars.

A smaller smelting plant is at Tongay, twenty-seven miles south of Coquimbo. Ovalle, situated in Limari Valley, and capital of the department of Ovalle, has a population given all the way from 5643 to 16,000. The first figures are more nearly correct. It is seventy-one miles by rail from Coquimbo. Vicuna is the chief town of the department of Elqui, with a population of 3300 and a product of wines, spirits, dried peaches, and raisins, all of good quality.

The region of the guano islands begins just

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north of Coquimbo and continues well toward Ecuador. This valuable substance for the enrichment of the soil, and marking the roosting places for centuries of countless millions of sea birds, is well nigh exhausted. Its exploitation made many persons wealthy and was a source of intrigue, scandal, and romance, both political and commercial.

The arid, rainless region of the west coast begins at Coquimbo and extends well up to Ecuador, with not a sign of vegetation or verdure, except at the narrow mouth of some thread-like stream like the Rio Quilca, twenty-five miles north of Mollendo, or the Rio Tambo, twenty miles south of the same place. Rivers are not numerous and a patch of green is a curiosity. A German sugar planter near the mouth of the Tambo said to me in meaningful tones that:

“Existence in South America is a lie and most foreigners would return home if they could get enough to leave with and then could muster enough courage to admit their failure.”

We encountered this feeling at several other places, and finally concluded that there was more behind it than homesickness and a mere yearning for Fatherland.

The valley of the Dead Sea and the bare Judean hills as seen from Jericho, and that vast blanket of death, the Sahara, do not look more desolate or forbidding or more accursed than

the desert west coast of South America. The winds from the neighboring ocean that caress this earthy corpse carry fine cloud burdens, but these flecky daughters of earth and water give down not one drop in the rolling centuries, and although tender nurslings of the sky, they are more cruel than Tantalus. Conditions for precipitation do not exist. The moisture-laden winds are not intercepted by the immediate coast hills, but pass on over only to meet the higher Andes which, as the toll-gate of the heavens, demand the tribute that belongs to the coast country that needs it so badly, and the Andes in turn deposit most of it in the big maw of the Amazon where it is a useless surplus.

About halfway between Coquimbo and Caldera is Huasco, at the mouth of the Rio Huasco, which is the northern limit of successful agriculture until the rainless region is passed. Huasco has nearly five hundred people and a smelter and is said to produce raisins equal to those of Malaga. Gold, copper, and manganese are found at Freirina, nine miles from Huasco, on the railroad to Vallenar, which is also a mining town. Vallenar is thirty miles from Huasco, at the end of the railroad and has a population of five thousand. Twenty years ago the population of Vallenar was semi-officially given at seventeen thousand, which was a wild guess. The Agua Amarga silver mine is near Vallenar.

Carrizal Bajo, where there are several smelting plants, is a small port about sixty-five miles north of Coquimbo, connected by rail with Carrizal Alto, twenty-three miles distant. Branches of the railroad run to the Cerro Blanco copper mines, sixty-two miles; Jarillas copper mines, fifty-eight miles; to the manganese deposits, thirty-eight miles, and to Yerba Buena. The copper mines are said to be exhausted and the region does not possess the life and activity that once characterized it.

Caldera is the principal port of Atacama, with a population of 2129. It is three hundred and thirty-seven miles north of Valparaiso, on the fine Ingles Bay, and ships gold, silver, copper, and lead. The oldest railroad in South America connects Caldera with Copiapo, fifty miles in the interior, with branches to Chanarcillo and San Antonio, sixty miles to the south of Copiapo, and to Puquios, forty miles to the north. The dream has been to extend this line across the Andes to Tinogasta in Argentina, by way of a pass sixteen thousand feet above the sea, and then build on to a junction with the line from Rosario.

Copiapo is the capital of the province of Atacama, and lies on the Copiapo River at the head of a narrow valley. It has a population of 8935, smelting works, and a school of mines. Here copper is mined to a depth of thirty-two

hundred feet, whither a very rich vein only a metre wide has been pursued. This is the deepest mining in South America, which is in great contrast to the work of the Incas, who never attempted to sink a shaft. The Incas only mined on the banks of streams and sides of mountains, or dug such pits as the workman could throw out the ore from or hand it up in baskets. They knew more about smelting and really reduced quite refractory ores in ovens and furnaces without bellows or any kind of forced draught, which they knew nothing about. They were so persistent at winning silver from the earth that it became common and all sorts of kitchen and bedroom utensils and ornaments were made from it with much skill, although their tools were rude enough, compelling endless patience in application.

Chanaral is a port forty-six miles north of Caldera, with three smelters and a population of 1852. A railroad connects with Huidido, thirty-four miles away, and there are branches to mines. The port is on the border of the desert of Atacama. In the vicinity gold, silver, nickel, cobalt, nitrate, and borax are found.

Taltal is four hundred and forty-five miles north of Valparaiso and has a population of 6441. The water supply is furnished by two distillation plants which take water from the ocean, and there is also a pipe line one hundred

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and two miles long to the mountains. There is a railroad eighty-seven miles to Cachinal, passing through El Guanaco gold district, and several nitrate operations. There are gold, silver, and copper mines, and borax deposits in the neighborhood and the town has several smelting plants.

Antofagasta, capital of Antofagasta province, five hundred and seventy-six miles north of Valparaiso, on the edge of the great desert of Atacama, is one of the big and prosperous and dirty and sickly and forbidding coast cities of northern Chile, where good people half live and entirely die for money, just as though the world were not full of other and more wholesome habitations for man. The last census gives the population at 15,961, but the enterprising, accommodating, and hospitable residents, for they are all that, claimed 25,000 to 30,000 in 1907. Water is brought from the Rio Loa at a point two hundred and fifty miles away up in the mountains, 10,000 feet above the sea. A still further supply is condensed ocean water. The town has five hundred miles of water pipes. A great white anchor painted on a barren mountain slope back of the city at a height of 1875 feet guides ships to anchorage past the dangerous Paita rocks which caused the loss of the *Petrel*. There is no harbor to speak of and landing at the mole is always difficult and often impossible.

Spray dashes in showers and the white salt foam curls over the black reefs, just like the very bad landing at Jaffa, which all Holy Land travellers remember so well and many with terror. The *fleteros* or boatmen are as clamorous as those at Jaffa and just as big robbers, which is unusual along this coast, where most of the *fleteros* seem to be simple and obliging. They do charge them with night crimes, though, and especially in such ports as Valparaiso and Callao. Drunken sailors have been murdered and others have been perched on buoys and deserted after having been robbed. Most of them would be sobered enough to cling to the ticklish footing of the bobbing, slippery buoy until morning and rescue. The harbor police and the naval patrol have an eye out at Callao and the *fleteros* after a certain hour are hailed and are so often overhauled that they sing out "*Largo*" lustily when they are challenged from the warships. At Antofagasta they will ask as much as twenty dollars Chilean to land a single passenger, but will often accept one or two dollars, a fair price, and will charge a native less than that.

The port waters at Antofagasta teem with sea lions or hair seals. They are to be seen on every side as they gracefully disport, or while engaged in capturing fish for food, which they do with great agility. There is a law against killing them promiscuously. One person has

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purchased a permit from the government to take a certain number during a prescribed season. Their oil is of value and the animals are being gradually decimated.

There are two graveyards at Antofagasta, and the living and the dead are on the parched flat together, only the latter have a little sand over them. Smallpox and bubonic victims are buried in grounds apart from the others, but there is no rivalry and the dead from all other causes seem to be in considerably greater numbers than those of the scourges. Poor souls, may there be a Heaven for them, for life in Antofagasta should suffice for both the punishment of Hades and the probation of Purgatory. The town is new and still the cemeteries look the larger as viewed from the sea.

The anchorage for ships at Antofagasta is good in one sense and bad in another. Sometimes a thing is too good, which is true of the bottom as a holding ground. Many a good ship's anchor lies on the bottom because it could not be broken away after it got its hooks in; the same thing may be said of Mollendo. So many anchors have been lost along the west coast and especially at the two ports referred to, that ingenious and covetous men have seriously considered plans for recovering them.

Near to Antofagasta is Moreno Point, where it is said many evidences of a prehistoric people may be seen.

This is the region of borax and nitrate. There are also exports of tin, bismuth, sulphur, copper, and silver. There are two silver smelters, one the largest in Chile, and there are several other reduction works, one of which calcines 1200 tons of borate of lime a month, most of which goes to Hamburg. It was worth ten dollars a ton in 1907. The raw material is obtained at Ascotan, on the shores of a lake two hundred and twenty-five miles from Antofagasta on the railroad to Oruro.

The monthly shipments of principal products from Antofagasta during the first half of 1907 approximated 2000 tons of borax to Hamburg mostly; 2000 tons of copper ore to European ports; 2000 tons of tin ore to European ports; 1000 tons of silver ore to Perth Amboy, New Jersey, U. S. A. The Consolidated Borax Company was being much discussed while we were at Antofagasta, because of the allegation, which had developed into a popular belief, that it had taken twice as much land as it had been granted by the Chilean government.

A commercial dispute at Antofagasta in the early days brought on the war between Chile, Peru, and Bolivia. The town is still an important port for Bolivia.

Between Antofagasta and Iquique there is a stretch of two hundred and eight miles by sea, with few ports and those only minor ones,

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including Tocopilla, one hundred and seventeen miles from Iquique, and Cobija, thirty-one miles further south. Cobija is a port for a mining region that produces some copper, tin, and silver. There is a railroad from Tocopilla to Toco, fifty-five miles inland, which climbs picturesquely over and through the mountains. The population of Tocopilla is 4577. The water supply is obtained partly from a distillation plant and partly from the Rio Loa, which is piped fifty miles. The iron mole is only second to the mole at Valparaiso.

Iquique (pronounced "E-kee-kay") has a population of 42,488, is seven hundred and eighty-four miles north of Valparaiso and is the greatest nitrate port in the world. The harbor is an open roadstead, but is one of the safest in northern Chile, which does not mean much should there be any danger. Most of quite a wholesome water supply is piped seventy-five miles from the Pica Springs. There are two distillation plants.

The United States consul, at Iquique, Mr. Winans, has held the post for sixteen years and is well spoken of on all sides. The vice-consul is a tradesman who seems to desire the post for what business it may bring to him. In the absence of Consul Winans, one would scarcely know there was a vice-consul so far as the duties of the office are concerned. There seems to be a



TRABAJADORES, IQUIQUE, CHILE

great deal of business mixed with official work in United States consulates all over the world, all of the profits of which go to the person holding the post, and any loss or discredit always reflects on the nation. But some little attempt is being made to improve the consular service, and some day, no doubt, it will be as good as the best instead of being as bad as the worst.

The plaza at Iquique with quite a monument of Arturo Prat and the streets in the centre of the town show life and color and give one a good impression as towns along the west coast go. Bad strikes and riots occurred here in 1907 which the Chilean government suppressed with a strong hand. Machine guns were unlimbered in the streets and a number of the lawless were mowed down, together with some innocent spectators who had no business to be where they were, bent upon no higher purpose than to satisfy idle and fatal curiosity. The strength and disposition of the government to deal with internal disorders has been manifested several times now and it ought to come to be a salutary impression with the public. The message to the people seems to have been: "Do not seek justice through lawlessness," and also this: *Para el mal que hoy acaba, no es remedio el de mañana*—"To-morrow's remedy is too late for to-day's evil," an old Spanish proverb not sufficiently in the average Spanish mind or in all others either.

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There are many of the customary odd signs. One that we particularly noticed bore the inscription: *Panaderia el Pobre Diablo* — "Bakery of the poor devil."

Ten miles out from town are the famous Huantajaya silver mines which have been operated for three hundred and fifty years and have produced three hundred and fifty million dollars' worth of silver, it is estimated. George B. Chase, of Boston, rehabilitated these mines at the expense of years of litigation and only made a success after a procession of the most trying and sensational experiences.

James T. Humberstone, of the *Agua Santa officina*, has his own theory of the origin of the nitrate deposits. It is a problem anybody of genius may make a guess at. Mr. Humberstone suggests that flashes of lightning through the moist air ages ago when nature was working hard at world-building and the air was humid in that region, caused the nitrogen and oxygen of the air to combine and form nitric acid. Primeval waters, for there are none there now, thus containing nitric acid, came into contact with the limestone and formed nitrate of lime; this found sulphate of soda to work upon and formed nitrate of soda.

The *Agua Santa* output is shipped from Coleta Buena, twenty miles north of Iquique and twenty-one miles from the *officina*. A

narrow-gauge railroad of two feet, six inches, connects this port and Agua Santa, and the cars are let down to the beach from the bordering bluff by cable.

A standard-gauge railroad of four feet, eight and one-half inches, runs from Iquique to Lagunas, two hundred and forty miles, passing through nitrate fields; and there is also a railroad north to Pisagua, one hundred and twenty-four miles. One may leave a north-bound ship at Iquique, take the interesting rail trip through the Salitra district in that direction, have plenty of time, and regain his ship at Pisagua. This port is only second to Iquique in exports, with nitrate as the chief one. It has a population of 4740. The railroad climbs out of the town by zigzags that required good engineering.

There are good schools at Iquique, including a professional school for women, a high school for boys and also one for girls, and an excellent college conducted by the Methodist Foreign Mission Board. The tram system of Iquique claims a mileage of ten miles, some of which must be up in the air.

Ten miles north of Coleta Buena is Junin, a small nitrate port used principally by the Jaz Pampa *officina*.

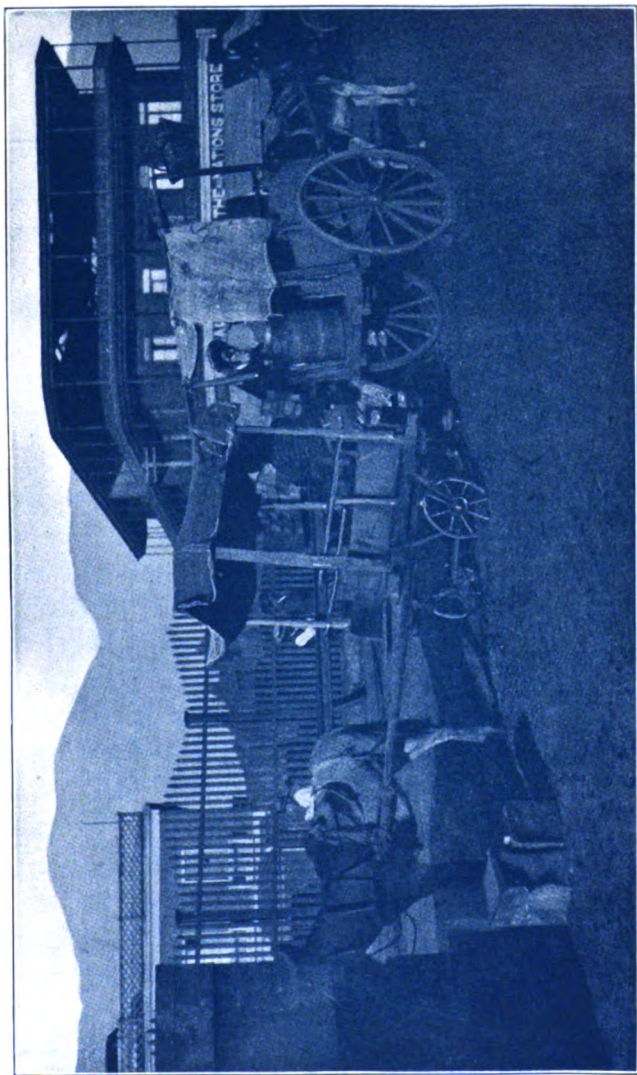
Arica, once a rendezvous for American whalers, is eight hundred and eighty-one miles by sea north of Valparaiso and is the northernmost

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port in Chile, with a population of 2819. By treaty made in 1905 between the two countries, Arica became a common port of Bolivia and Chile, although it has not much Bolivian trade at present. There is not a more picturesque port than Arica on all the west coast north or south. The Morro de Arica, with its tragic mantle of history, and Alacran Island, with its ruins of an old Spanish fortress, form a suitable foreground for tapering Mt. Tacora, 15,000 feet high, and the snowy Andean range of which it is a part, far in the background on the blue and cloudless sky line. Then there is some tilth procured by irrigation, and the oranges of the region are better than the average, the approach to the equator making for better citrous possibilities.

It was at Arica that the U. S. S. *Waterlee* was carried a mile ashore by a terrible tidal wave in 1868.

Tacna is only thirty-eight miles distant, just a nice little railroad ride and well worth taking. All of the surroundings are attractive and the people wish to please and have a desire to be well regarded. They are still Peruvian in sentiment and indulge the forlorn hope that some day they will return to their own, and seem somewhat sad, just as the peasants of Alsace impress one. The Peruvian temperament shows its contrasts here, less independent, fiery, and spirited than



IQUIQUE, CHILE

the admirable Chileno, provoking sympathy and friendship rather than applause. The sun can be charged with this. It always has been the man from the colder country who dominates.

Tacna has a population of 11,104 and is the capital of Tacna province. An interesting and unusual mirage effect is to be seen on the desert between Tacna and Arica. An ancient roadway built by the Incas connects Tacna with La Paz, a ride of something like eight days by mule. There is also a mountain trail to Oruro. The mountains as seen from Tacna are overpowering in their grandeur. From the Bolivian trail one may see, among other majestic peaks, Mt. Tacora, 15,000 feet; the volcano Gualatieri, 22,500 feet; Mt. Parinacoto, 22,600 feet; Mt. Pomarape, 22,450 feet; Mt. Sahama, 22,350 feet; Mt. Kenuta, 19,200 feet; Mt. Pettagua, 17,700 feet; Mt. Chipicani, 16,000 feet; Mt. Cancana, 15,500 feet. Probably nowhere else in the world can such a group of cloud-piercing peaks be seen, and the conditions for observation are nearly always perfect.

At the conclusion of the war between Chile and Peru and Bolivia there were some questions left unsettled, the most dangerous of which for future peace probably is that of Tacna and Arica, which may be called another Alsace and Lorraine. It was agreed that for ten years the province of Tacna and its bright and clean little

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seaport Arica should be governed by Chile. At the expiration of ten years it was the definite agreement that a plebiscite should be taken upon the question as to whether the people of Tacna would elect to remain a part of Chile or go back to Peru. In case they voted to remain in Chile that government was to pay ten million pesos to Peru, and in the event of a decision to return to the mother country then Peru was to pay Chile the same amount. The ten years in question expired in 1892, and still there has been no referendum. Chile claims that Peru has not been in condition to pay the indemnity in case of winning, and relates that even before the war that country had begun to be delinquent as to the interest on the public debt, and that being true how could it pay ten million pesos in the absolutely impoverished condition that the war left it? Peru contends that Chile is well aware that Tacna would vote to return to Peru and that pride and selfishness disincline Chile to live up to its treaty agreement; that Chile seeks to defer the date of the plebiscite until Tacna and Arica shall have been weaned from Peru or until enough Chilenos settle in the disputed district to outvote the Peruvians. With Tacna and Arica celebrating Peruvian national days and reverently worshipping Peruvian heroes, and especially those of the war between the two countries, the time has not been opportune in

all the fifteen years that have elapsed and will not be in fifteen more years, according to Peru.

So there may be another war. Chile says Peru is arming for the purpose and does not regard with complacency the new Peruvian warship, *Almiranta Grau*, just completed, and the other new cruiser, the *Coronel Bolognesi*, to be completed very soon.

A prominent Chileno told me he was riding upon a Paraná steamer last year when the Peruvian minister to Argentina came aboard. Upon being introduced to an Argentine the Peruvian minister turned the topic of conversation to the relations of Peru, Argentina, and Chile, during which he is alleged to have said:

"We shall have to get after these 'Rotos' together."

The term "Rotos" means "the raggeds," by which the Chilenos are called by all of their left-handed South American friends. The Chileno in question volunteered his belief that there would be another war and that Peru would be supported by Argentina in spite of the treaty of peace and disarmament that exists between Chile and Argentina. I asked the Chileno whether Tacna would ever be given up by Chile and he said it was more likely that Chile would absorb Peru itself. Then I asked a Peruvian if they would regain Tacna and he said: "Only at the point of the bayonet, but we

will get it." I give this as indicating the attitude of mind of the people of Peru and Chile, of which it is quite an accurate reflection. Meanwhile the feeling of Bolivia toward Chile has changed to one of friendliness, caused by the large amount of Chileno capital invested in Bolivia, which in the mines alone is said to be fifty million pesos, resulting in much talk of a union of Bolivia and Chile, in which Peru is always included. A missionary told us that he asked his Sunday school class in Peru whom Jesus Christ died for, only to have a bright little Peruvian boy reply:

"For all mankind except Chilenos."

Coca leaves, from which cocaine is extracted, grow upon a shrub from two to five feet in height. They are a little broader than a California cherry leaf, which they resemble. The Indians of Peru and Bolivia begin to chew coca leaves when they are children of six and are able to work a fortnight without food or discomfort if they have a plentiful supply of the leaves. If they are to choose between food and coca leaves they invariably take the latter. In spite of this and the additional horrible fact that they are incestuous, they are said to be increasing in numbers and have great longevity, not infrequently reaching one hundred years of age.

It is estimated that there are two hundred thousand Indians in the region tributary to La

Paz. Their common food in addition to coca leaves, which may really be considered as much food as stimulant, is *chuno*, made from potatoes, most of which grow wild. Two kinds of potatoes are used. One makes a white and the other a black *chuno* — pronounced “choon-yo.” The potatoes are taken raw and placed under the snow which is to be found perpetually in their high home mountains. There they are left to freeze at night and are taken out and thawed in the day time for four or five days, by which time the potato is much swollen. Then they place the potato in the fierce sun until it shrinks to one-quarter its original natural size and turns quite hard, after which it is ground into a pasty flour between stones, out of which a dish resembling the *poi* of the Sandwich Islanders may be made. *Chuno* is used in various ways and is the Indian staple in the highest inhabitable Andes.

These wild Andeans have many curious customs. In marriage the groom, immediately after the ceremony, is required by some tribes to take a journey of three years on foot, and by other tribes five years. He leaves his bride in the keeping of his best man and goes on his long pilgrimage carrying only supposed medicinal herbs with which he practises on all who will permit him and who will, as compensation, contribute to his maintenance. After the time

elapses he returns home sobered in self-control and takes possession of his bride and the three or four children of which his best man is father, as has been expected of him.

The official geographer of Peru is an Italian. It is reported that his measurements of some of the peaks of the Andes in Peru have resulted in finding a mountain that has an altitude of nearly 30,000 feet and is higher than Mt. Everest in the Himalayas.

One of the indications of departure from Spanish customs defining the difference between the Spaniard and some of the South Americans is the fact that bullfights are not allowed in Chile, Argentina, and Uruguay and in some of the other republics as well.

There are many seabirds along the west coast, dating even from the days of the guano-making, but there are more at Arica than anywhere else, not even excepting Callao, where they are also particularly numerous. The reason for this aquatic bird population is the plentifulness of just the fish they like best and the ease with which they can be secured. A favorite feeding place at Arica is the little strait between Alacran Island and the mainland, where the tide waters rush back and forth quite boisterously. We watched the seabirds at their banquets for several days, and by the use of a powerful glass every detail of the manœuvres of

feeding could be seen. Just after daybreak in the morning, and again at about four in the afternoon, when the sea was now a pot of amber and then a basin of purple, except where the tide asserted itself like an anarchist and either spoiled every effect of art or emphasized it with contrast, the birds could be seen coming in columns, now abreast and at other times in single file or by twos, just like an aërial army. Each company had a leader and commander and there was much rivalry for place on the feeding grounds among newcomers who did not seem to understand the assignments that had been made by the strength and courage of the strongest birds which had fed there longest. The naked eye or the marine glass could not see the end of this bird flight as it emerged from the horizon. The assault upon the fish was terrific. It attracted numberless sea lions, and between their raucous barking and the roar of wing and the cries of the excited and eager birds, the scene appeared to be one of rare confusion. Results did not indicate lack of order and everything moved finely except for the fish. Great schools of fish bore in and out with the tide, passing over the shoals of the straits where they were ambushed and had been for centuries without that strange instinct of nature asserting any seeming preservation. Perhaps the birds and sea lions are among the agencies of nature in

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preserving the equilibrium of sea life, and if so any sympathy for the fishes goes for nothing.

Anyhow, the sea lions rushed and the birds swooped down with perfectly timed precision. There were uncountable numbers of pelicans, still more numerous Cape pigeons, and gulls of all sizes. The Cape pigeons, hundreds at a time, would dive as an army, each bird striking the water at the same moment and all of the great flock disappearing, leaving the air near the surface of the sea full of little arrows of water they had displaced, until the appearance for a moment was as of thousands of transparent stalagmites. The pelicans were in flocks of from twenty to thirty. They would approach the feeding grounds on heavy wing, wheel gracefully, swoop upward, then turn a somersault at a height of about thirty feet, and with legs up and head down, body almost perpendicular, rigid and elongated like a spear, they would shoot downward into the water with tremendous momentum. Just on striking the water they would execute a quick turn and then endeavor to resume flight as they pouched their captives. By dint of clumsy but vigorous wing-flapping they would gradually rise from the water, which was the only ungraceful act in the grand performance. Just as fast as one flock had gone through this tactic, it was followed by another and so on, for there were many flocks

feeding at the very same spot. Each flock after a dive would swing far out to sea, describe a circle of more than a mile, and then returning take its place for another chance and so on, until their pouches were filled.

The pelicans were hard beset by a piratical gull, sooty, agile, and about the size of the gull of Bonaparte. These gulls flew alongside the pelican, bird for bird, and when the pelican would rise and be in the act of pouching its fish, a gull would jostle it and grab the spoil. I saw this done hundreds of times, morning after morning and evening after evening, as long as there was still a sooty gull with an appetite for fish or fun with the pelicans, for they really seemed to enjoy the discomfiture of the bigger birds. We shall call these sooty pirates Japanese gulls, because they treat the pelicans as the Japanese fishermen treat their trained cormorants which fish for them. The play of the sunlight on the waters and the wet wings and bodies of the birds was bewitchingly attractive.

A huge buzzard, called locally *guitre*, almost as large as a condor, would perch in some numbers each day on Alacran Island, and as they moved about clumsily quite suggested the dodo. At Arica we began again to see the horrid, but faithful and useful *gallinazo*, the scavenger bird of the tropics. They are to be seen in the door-yards and on the housetops, and hundreds of

them roost on the yards of ships in the harbors, and especially at Callao, and are come to be almost sacred, and of course are protected by law. A gentleman in Bahia, Brazil, remarked to us concerning the gallinazo:

“They are our only honest, fearless, and efficient public officials,” which is part humor and part truth and in no wise too much of a tribute to the bird.

The Bolivian Indians and half-breeds are very regardful of a little black and red bean, most diminutive, called *guairuo*. Many of these tiny luck beans, strung on strings or loose, are to be seen in the Tacna and Arica country. They will grow nicely in a pot and have a sweet-smelling, though faint, delicate miniature blossom.

CHAPTER XVI

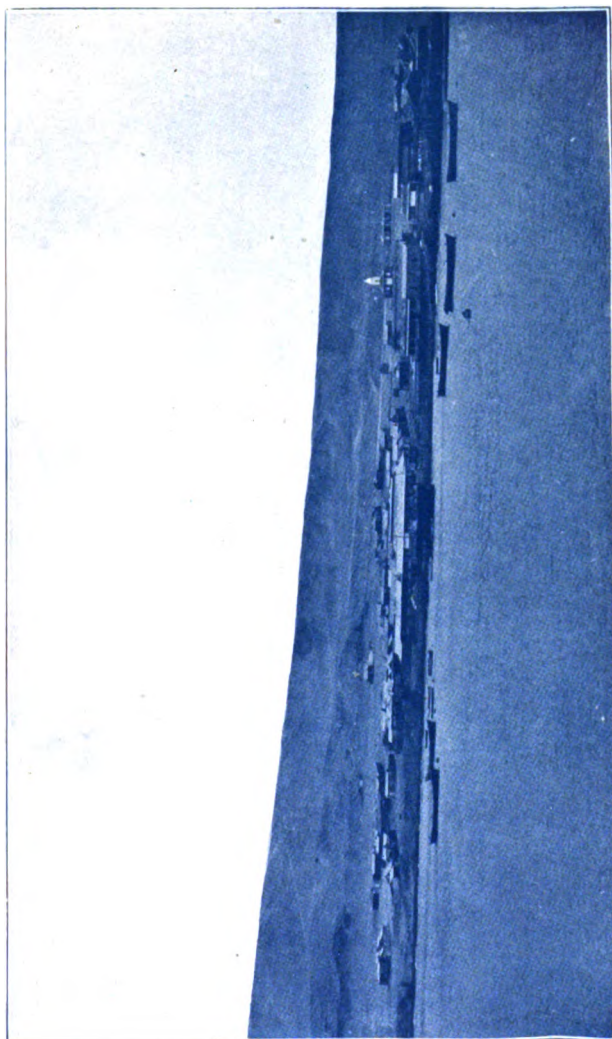
UP THE WEST COAST

Along the Peruvian Coast—Dancing the Cueca—A Home-made Little German Band—Cruel Handling of Animals in Shipment—Arequipa—Moving Sand Crescents of Islay Desert—Pisco and Ica—Chincha Islands—Proposed Chilean Coastwise Railroad—Callao—Lima—Pizarro's Bones—Pachacamac—Rio Rimac—The Callao Doctor—Humboldt Current—Trujillo—Ancient City of Chan Chan—Pacasmayo—Eten—Lobos de Afuera—Chiclayo—Lambayeque—Payta and Piura—Matacaballo Desert—Cabbage Wood Balsas—South America the Cradle of Mankind from Whence the Earth was Peopled—A Plea for Atlantis and a Theory of the Biblical Deluge—Peruvian Money Law Prohibiting Silver and Copper—Monetary Units.

THE first port in Peru, going northward, is Ilo or Ylo, at the mouth of the Ilo River, sixty-five miles southeast of Mollendo, population two thousand. This is the land of *pisco*, a white and fiery grape brandy that tastes like *vodka* and is nearly as strong. The region about Ilo also produces good white wines and olives of greatest size, and *dulce de leche*, a candy of a superior quality. Each day's sail

going north is toward the equator, and the rays of the sun become sensibly more nearly vertical and powerful. This does not dispirit the native crews of the coastwise boats who work hard all day at stowing and trimming and shipping cargo, and at such little cleaning work as they do. At eleven o'clock nearly every night, on a happy ship, all of the watches gather on the forecastle or amidships and dance the *cueca*, just as our lumber Jacks will work all day and play poker for tobacco and socks or take part in a stag dance at night. The Chileno sailors have the most grace and spirit and humor in the stag *cueca*. There is always a clown and sometimes two or three, and they strive to surpass in awkward and grotesque figures and postures. At frequent intervals the *pisco* bottle is passed or *aguardiente* or some other strong potion, and the dance goes on wilder than ever. Under the rich tropical moon that burns like a silver flame in the mirroring waters of the lazy sea, not a breath of air stirring, not a wavelet lapping the ship's bow, the *cueca* dancers stripped to the waist and their long hair rivalling Medusa's, eyes black and snapping with the fury and delirium of dance and *pisco*, the picture is one that not soon fades from memory.

Woe betide the ship that takes on a mixed crew of Chilenos and Peruvians, for then harmony is gone and brawls and the knife drive



ILO, PERU

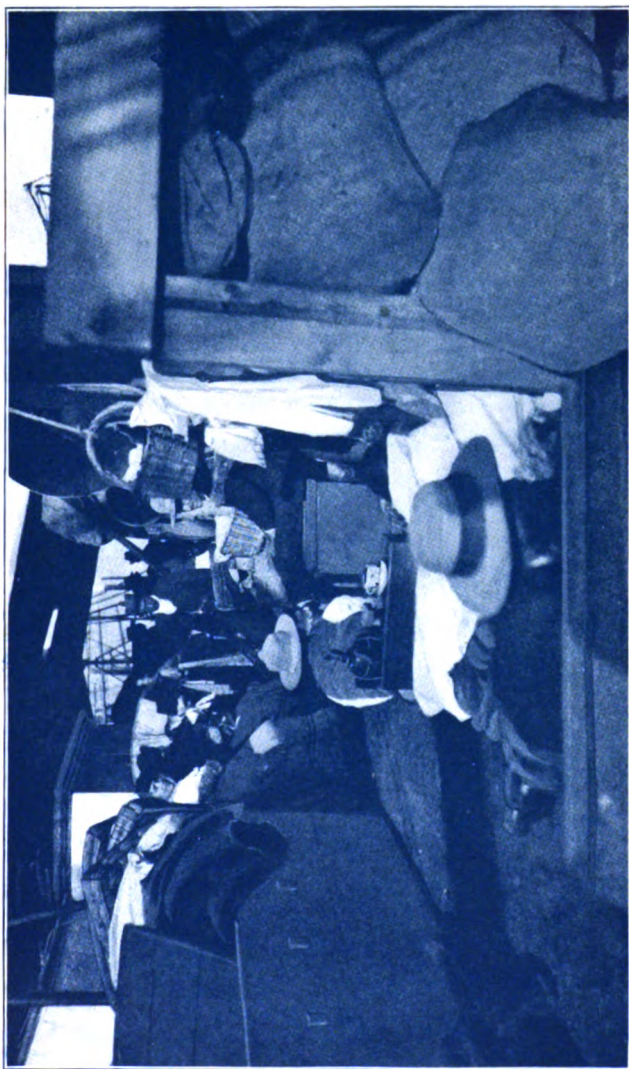
away all thoughts of lighter fun. Most of the ships' crews are happy in their way. On one slow German tramp steamer stealing laboriously up the coast and into every river mouth where a bull bellowed or a sheep bleated or a salt man waved the ensign of his *balsa*, we saw a band that the musical Hamburgers had organized. All of the instruments except an accordion were home-made on board. The bass drum was a section of a barrel, over the open heads of which a piece of canvas had been stretched taut and then shrunken until more so by being kept continuously saturated with salt water. It sounded more like a big drum than it looked. The cymbals were old copper pans from the galley; the triangle was a piece of small bar steel; the snare drum was a big pan whose inclination to excessive vibration was balanced by molten lead run into certain places of the bottom; and there were tin horns and combs and paper, and other things that squealed, squawked, screeched, rattled, and tooted, while the accordion maintained the air of the piece they would strive to play. To the noise of this forecastle band the sailors would dance and sing until all hours of the night, just to prove Pope's assertion that "discord is music not understood."

These coast boats, and particularly those of the Chileno line, are loaded and crowded with everything under the sun, and so it is no wonder

they come to be called Noah's Arks. There are always more passengers and freight than can be safely or comfortably carried, which is more a lack of management than anything else, although the Chileno line is said to have made a profit of sixteen per cent in 1906, which may be only a product of rumor.

The German boats are always interesting, and some of the Kosmos line ships are really good and have clever and obliging masters. Others are bad, and are commanded by surly, drunken fellows. When two Kosmos ships meet in a port it is an occasion of fraternizing and beer drinking until the most of the men are under the table. There does not seem to be any discipline aboard, and very often no good feeling between the officers, in spite of which the service rendered is satisfactory where better is seldom to be had and worse could not be. Sometimes their ships go ashore and are lost in perfectly calm weather, as in the case of the fine new Kosmos ship that was lost near Ocos in the Spring of 1907.

The way live-stock is handled in shipment all over South America would give a humane society director heart failure. Sheep are handled aboard ship either in loading or unloading by throwing a slip noose around the heads of a half-dozen together. When they are hoisted, the sheep are hung and strangled, but soon recover and scramble off when they are able to regain their



THIRD-CLASS PASSENGERS

As they Lived on Deck among the Oxen, on the *Thoben*, a Pacific Coast Steamer

legs. Once in a while if the hoist does not work right, the poor things are poised too long in mid air and do not recover. Horses are hoisted on board and off in very safe and comfortable slings, which are sometimes used for cattle. Often, however, cattle are raised by a rope around their horns, and we saw several dehorned in the most shocking way by hitting the rail as they came aboard ship, or in some other equally brutal manner, the creatures testifying to their suffering by loud and heart-empaling bellowing. While others may do it, we saw only Germans treating live-stock so cruelly, going some way to prove the assertion of a critic that the ordinary Teuton has the dulled instincts that peculiarly fit a person for following the trade of a butcher. We saw many cattle being transported down rivers and even coastwise by having their heads tied to a long sort of a yard arm or piece of bamboo fastened to a canoe so as to project at right angles. Once we counted sixteen cattle fastened thus to one canoe. They swim along as the canoe man paddles and are thus led for long distances. When they come to sufficiently shallow water, they regain their feet and walk until deep water forces them to swim again. The tropical South American is an expert at using everything's energy but his own.

Back from Ilo, fifty-five miles, is Moquegua, with a population of six thousand, capital of

Moquegua province. The two places were connected by a railroad which was torn up during the war with Chile and has not been rebuilt. Copper, silver, borax, salt, marble, olives and other fruits, and agricultural products distinguish Moquegua.

The snow-capped mountains as seen like clouds from the sea between Ilo and Mollendo are rare in their beauty, even in the Andean land, where one may have any kind of a mountain in color, shape, or altitude he likes best. Some of the peaks are: Urbinas, 16,000 feet; Charchani, 19,000 feet; El Misti, 18,650 feet; Illimani, 21,148 feet; Sorata, 21,286 feet; Coropuna, 22,000 feet; Apucuncarani, 17,500 feet; Pichupichu, 17,800 feet; Vilcanota, 17,550 feet. Many of these can be seen from the sea and all are on the route between Mollendo and La Paz.

Arequipa, at the base of El Misti, 35,000 population, with its light-colored, porous stone houses, painted pink, blue, green, and cream, is always an interesting place, but is not always enjoyable on account of severe and sudden changes in the temperature. It is only ninety miles from Mollendo and easily visited by railroad even if one has not time to continue on to La Paz. The journey to Arequipa across the Islay Desert permits the traveller to see the interesting moving sand crescents, where the wind and the sand join in performing truly remarkable

feats, approaching the dignity of natural phenomena. The trails across the desert are obscured in a few minutes after a caravan has passed, and the guides are enabled to keep on the right course by smelling a handful of sand from time to time. The sand on the trail, just under the surface, has a strong animal odor from the droppings of ages of travel.

After Ilo, northward, there is less population for a stretch and the ports are fewer. Pisco, one hundred and eleven miles from Callao, is the principal port on the way to Callao, and between Pisco and Mollendo are the small ports of Chala, one hundred and fifty-nine miles from the latter and two hundred miles from Pisco, and Lomas, near to Chala, and near both in the interior is Coracora. There are fine valleys where farming is successful, and many sheep and cattle are shipped and a good deal of wool; also a little copper and silver. From Chala the volcano Achataihua, 13,800 feet high, thirty miles away to the northeast, can be seen.

Pisco has a population of thirty-five hundred. It is a centre of ranching and viticulture, and the cordial called *Italia* is made there. There is a railroad to Ica, forty-four miles, where great quantities of wine and brandy are made and where quite a little cotton is grown. There are good mineral waters in natural lakes where not a few repair to bathe for rheumatism, skin and

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stomach troubles. Ica has a population of eight thousand. Gold, copper, iron, and coal are found in varying quantities near by.

Pisco is also the port for Huancavelica and Ayacucho. The former place is one hundred and twenty miles from Ica and the latter is one hundred and eighty-two miles. The quicksilver property of Santa Barbara is near Huancavelica. Ayacucho is justly celebrated for filigree and other fine art work in silver. Castroviregua, seven thousand population, is a silver-mining and farming community, one hundred miles from Ica.

Ten miles out to sea from Pisco, and partially sheltering it, are the Chincha Islands, where Peru once obtained a very large revenue from guano. It may be a mistake to state that Peru got the revenue, because it is charged that most of it went no further than to certain corrupt officials. The guano, which was once regarded by Peruvians as inexhaustible, is gone, and the great wealth it represented has been largely dissipated. It was owing to the unwise policies of Peru that the sympathy of so many was cut off when the nitrate fields were lost to Chile. That country seems to have learned something from the experience of Peru, but not enough, so she is told by her wisest and most patriotic counsellors, who fear that their great nitrate resource will be gone before they know it, and the profits will be eaten

up as they come, with insufficient permanent benefit to the country. Chile is planning a coastwise railroad from the Straits of Magellan to the Peruvian border, two thousand, three hundred miles. The nitrate receipts would more than pay the cost of such a necessary line if honestly devoted to the purpose, and the result would be a monument to the wisdom and honesty of the people.

Cerro Azul is seventy-two miles south of Callao, and is a sugar-shipping port for Cañete, in Cañete Valley, five miles inland.

Callao, with a population of 48,118, and Lima, with 113,000, are nine miles apart and are connected by a railroad up the rich, short valley of the Rio Rimac.

Lima is the first and the last of the settlements on the Pacific coast to have been under the Spanish flag. Lima is supposed to have derived its name from Rimac. The valley was called Rimac Malca by the Incas, meaning "Place of Witches." Before the rule of the Incas, according to tradition, and on through their sovereignty, it was customary to banish all persons accused of witchcraft, and from the beginning they were sent to the valley of the stream upon whose banks Callao and Lima still survive and flourish. It is even recorded that when the grandfather of Manco Capac and Mama Ocollo, his sister, presented them to the Indians of Cuzco as children

of the sun and hence their rulers, that they were regarded as "rimacs" on account of their unusually fair complexion and light hair, and were banished to Rimac Malca.

The Spaniards called Lima La Ciudad de los Reyes, from having been founded by Pizarro on the day in 1534 that the Roman Church celebrates Epiphany, or the feast of the kings. Charles V. gave Lima the title and arms of a royal city in 1537. Pizarro's bones are in a glass case in the Lima cathedral; at least, a skeleton is pointed out as such.

Attractive resorts on the sea that serve both Lima and Callao are Ancan, Magdalena, Miraflores, Barranco, and Chorillos, all reached by steam railroad or tram. Nine miles from Charillos is Pachacamac, which many regard as being more interesting than Cuzco, and certainly much more easily and conveniently visited. Pachacutec, the tenth Inca of Peru, built one of the richest of temples there, the ruins of which are impressive and suggest the ancient glories of Jerusalem and Babylon, for Pachacamac was a large city. The ruthless Pizarro arrived at Pachacamac in 1533, and at once plundered and demolished the temple. His soldiers were like those of all barbarous invaders, and far inferior in manhood, honor, and sentiment to the subjects of the Incas. They ravished the Virgins of the Sun, who performed a sacred service in the

Incan religion and who were as pure and as innocent as the vestal virgins or the nuns who loan so much chaste sanctity to the Roman Church.

Pizarro's palace in Lima was located near the Plaza Mayor and it is said to be possible still to find remains of it on the Callejon de Petateros or Mat Maker's Alley. The murder of Pizarro occurred June 26, 1541, the common regret for which is that the act was much too long deferred, which, however, may be an entirely unworthy thought, as the brutal and barbarous have ever been the agents of events.

Lima has a most equable climate and rarely experiences either extremes of cold or heat. The greatest average range during the year would not be more than from a minimum of sixty-one degrees to a maximum of seventy-nine degrees Fahrenheit, with the range much less than that as a general thing. There are many sunny days. In the Summer the melting snows of the Andes and the rains in the interior cause the Rimac to rise in volume considerably, and so careful is the observation of the men who make it a business to carry travellers and merchandise across the larger streams, that they can tell exactly where the rain fell from the time the rise of the river began. Earthquakes are felt each year and sometimes each month, generally after sunset or before sunrise. These are said not only to be destructive of buildings, but to be injurious to the soil.

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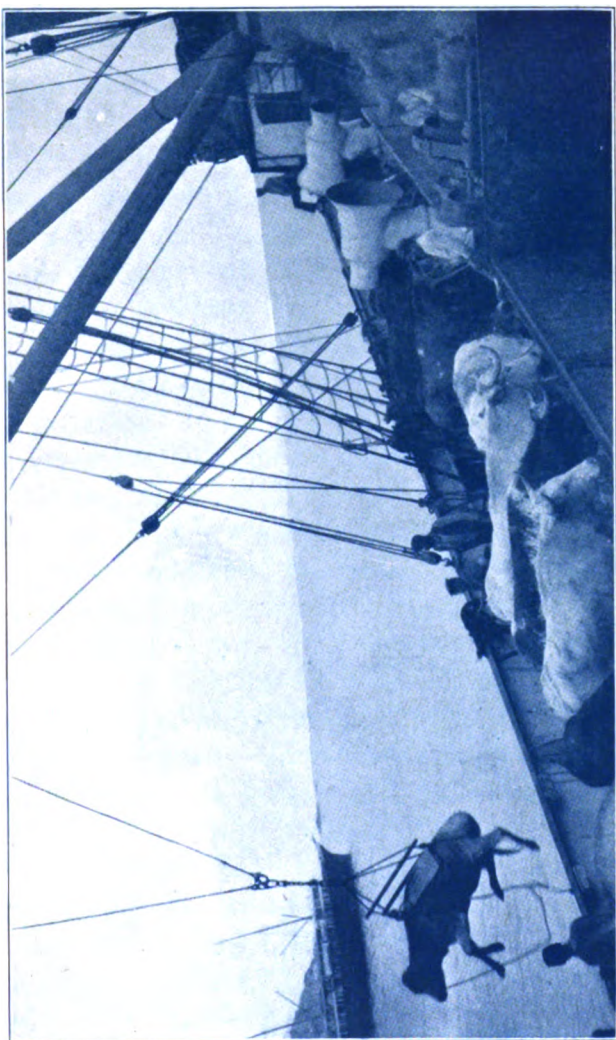
One observer says that a place in the valley which was formerly notably fertile would not reproduce the seed sown on it for twenty years after being subjected to a severe earthquake.

When the south wind blows, everybody in Callao and Lima is happy. It brings a fresh burden of vitality and is stimulating to every faculty. Quite properly and appreciatively the south wind is called the "Callao doctor." Quite as much credit, if not more, is due the Humboldt current, that most insistent of Antarctic Ocean currents, which assails the very equator and neutralizes its heat. This current has a marked effect upon the coast climate to as far as Guayaquil, after which its influence is not so noticeable.

Following the coast north from Callao, the coast towns are not important until Salaverri, two hundred and fifty-six miles distant, is reached, and this place has a population of less than two thousand. Some gold is mined back of Salaverri and there is a railroad line to Trujillo and on through Chicama, Mocollope, Chocope, Tanque, and Facala, forty-seven miles to Ascope.

Trujillo has a population of eight thousand. It was one of the first towns founded by Pizarro and is still a walled city.

About two miles from Trujillo is the ancient city of Chan Chan, or Great Chimu, once the capital of the Chimu tribes, where ruins of value



UNLOADING LIVE STOCK

and great interest are to be seen. A huge reservoir built here by the Indians is one billion, eight hundred million cubic feet in size and is of perfect concrete. There are ruins of a temple of the sun and other signs of their accomplishments.

Sugar cane and corn are raised in considerable quantities in the Trujillo region. The big sugar estates are interesting. There are many that are easy of access where the visitor is made welcome with considerate hospitality. The Laredo estate is only six miles out of town and the Galindo twelve miles.

Among the lesser ports between Salaverri and Callao is Chimbote, sixty-one miles to the south of Salaverri, on a well sheltered bay. Sugar is king in the adjacent valley of Huaylas and the large plantations are served by a railroad running from Chimbote through Palo Seco, Rinconada, Vinzos, Mount Hermoso, to Suchiman, between twenty-five and thirty miles. Extensions of this road are planned. Anthracite and bituminous coal measures of great value are claimed for this region, of which there is no especially convincing evidence in the nature of development. There is some silver and it is mined and shipped from Samanco and Casma. Back of Huarmey the Ticapampa Mining Company has a big silver property and plant.

Puerto de Supe is ninety miles from Callao and Huacho is seventy. Cotton, sugar, and

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some ore are shipped, and from the fine valley back from Huacho much fruit and farm produce is sent to Lima and Callao. From Supe there is a railroad three miles to San Nicolas.

Pacasmayo, sometimes spelled with a *u* instead of the final *o*, is two hundred and ninety-one miles north of Callao, near the mouth of the Rio Jequetepec, and has a population given at two thousand. Sugar, rice, cattle, and other products of the fertile region tributary are shipped out. A railroad runs to San Pedro de Lloc, population five thousand, a little over fifty miles, passing through San Pedro, five miles; Calasnique Junction, ten miles; Tecope, twelve miles; Tolon, twenty-five miles; Monte Grande, thirty-five miles; Tembladera, thirty-nine miles; Yonan, forty miles. At Calasnique Junction the line diverges to Guadalupe, population four thousand, twenty-seven miles from Pacasmayo, passing through San José, eleven miles; Chafan, fifteen miles; Talambo, twenty miles; and Chepen, twenty-two miles. The Brazilian district of Amazonas has a trade outlet to the Pacific through Pacasmayo. Traffic, both passenger and freight, goes by mule from Pacasmayo to the Huallaga River, whence there is steamer navigation to the mouth of the Amazon, with possibilities of trade and travel in many directions. The rail ride from Pacasmayo to San Pedro de Lloc and to Guadalupe gives one a

wholesome and enjoyable idea of pastoral Peru at its best. At Guadalupe a great fair is held in December, whose features are unique. One may also go from Pacasmayo to Cajamarca, population twelve thousand, and to Chepen, population five thousand, five hundred, and to other interesting points in the interior.

Eten, celebrated for Panama hats and fancy cigar cases, population three thousand, is three hundred and thirteen miles north of Callao. The main town sets behind a promontory six hundred and forty feet high, two miles from the port. There is a broad-gauge railroad to Chiclayo, Lambayeque, and Ferrenafe, with a branch from Chiclayo to Potofo, a total of forty-eight miles. Nine miles north is Pimentel, a rival port of Eten, both contesting for the business of a common region. Eten has kept ahead so far. A late record gives Eten's business as a port at \$209,040 for imports and \$1,178,724 for exports, and that of Pimentel at \$60,609 for imports and \$231,666 for exports. There is a railroad from Pimentel to Lambayeque, fifteen miles.

Out at sea fifty miles, opposite Eten and Pimentel, lie the famous guano islands of Lobos de Afuera, which have belonged to Chile since the war.

Of the towns served by Eten, the most important is Chiclayo, twelve miles inland, population fourteen thousand. Lambayeque, eight

miles by rail from Chiclayo, has a population of six thousand. It is a country of wine, sugar, and rice, and there are many large landed estates whose rich proprietors are grand seigneurs and whose workmen are peons subject to their every whim. As a general thing the common people are well treated and their lords are kind, generous, and hospitable, even if a bit fiery and worldly. These conditions are more apt to occur in Peru than in Chile, where the spirit of manhood and personal independence is the best developed anywhere in South America. Near to the great Hacienda Pucala, easily reached from Eten, are the ruins of a once formidable Inca fortress.

Payta, or Paita, four hundred and seventy-nine miles north of Callao, population five thousand, is the port for Piura, capital of the department of Piura, sixty miles inland. Payta hauls its water supply daily by rail in tanks, which system if clumsy is unique. Petroleum is found at Talara, thirty miles north, and at Zorritos, one hundred miles north, and also coal and salt. The oil industry is considerable and convenient and may become baity enough any day to attract the serious attention of the Standard Oil Company, which busies itself in Russia and China and all over the world where there is likely to develop a large and cheap oil supply.

The sandy bluffs, crooked, unpaved, unclean

streets, and houses of bamboo and adobe at Payta are not inspiring. Exports include cotton, hides, goat skins, coffee, straw hats from Catacaos, *cundurango*, salt, and pearl shells. *Cundurango* is the bark of a vine of the milkweed family, *Gonobolus Cundurango*, once thought to be a cure for cancer, but this idea is now disproven.

Piura, sixty miles by rail from Payta, population fifteen thousand, is one of the most important towns in northern Peru and a health resort of local renown. Trade gathers from the northern valleys of Peru and from southern Ecuador. Besides the railroad to Payta, there is one to Catacaos, six miles distant, where a great straw hat industry has developed. Several good oil wells have been sunk in the vicinity. There are eight churches, two newspapers, two theatres, two clubs, and two hotels.

Not very far from Payta on Sechura Bay, either so big or so small as to be invisible, is Matacaballo, "where horses are killed." This does not refer to a horse-meat cannery, but to a desert for fifty leagues along the coast, where the going is nearly impossible on account of the loose, rolling sands, most wearisome indeed to man and beast. We tried to make a short call at Matacaballo on a rusty, old-fashioned, iron tramp ship. The chart shows seven fathoms of water well into the shore, but our ship found only three and a half to four fathoms over three miles

out, so we struck the bottom, which clung to us for thirty hours, bumping and straining the old ship until her pumps were busy enough all the balance of the voyage. The surf rolled high on that horse-killing shore, which we had plenty of time to observe. Once in a while a huge billow came along, very much higher than the others. In the hope of such a visitation, the captain managed to turn the bow of his ship out to sea. Then he invoked the elements and Neptune was pleased to answer, for true enough a big wave lifted us high, and would have swept us hard ashore had not the bow been headed a-sea and the engines working at their best. So we got off.

Anchoring in plenty of water, the captain decided to take on the cargo of salt he had put in for. Off it came on huge cabbage wood *balsas*, manned by almost naked natives who worked like demons, now in the sea and now out, and seemingly submerged full half the time, but jolly and brave like a lot of mermen at a feast. The salt was in coarse sacks, fifty kilos to the sack and two hundred and fifty sacks to each *balsa*.

These *balsas* or rafts of cabbage wood are made from the trunks of *ceibo* or cabbage wood trees and are often fifty feet long or more. The logs are lashed together and they look crude enough until one sees what the skilful natives do with them. Equipped with a large, clumsy, single sail, and with many boards and

paddles to shove down between the cracks of the raft to act as a lee board *à la* Holland, they sail surprisingly well and will even beat to windward. There seemed to be no captain, obedience being given to the member of the crew who for the time had not yelled himself hoarse and could still make the greatest noise with his lungs. The command thus passed from one to another as the tired throat refused to contract or expand or vibrate. Nevertheless, they made good landings alongside and made fast with their bark ropes or to lines from our ship. The breakers would repeatedly wash over balsa, salt, men, and all, but no harm came except to dozens of sacks of salt which were dissolved only to wash ashore again in solution and be caught and dried out naturally by the sun, for that is how they get much of their salt.

Even if the salt beds along the coast are natural, the work of winning the salt is hard and tedious and those engaged in it earn all they get.

The balsa was used by the natives before the Spaniards arrived in South America. Some of the trees used in constructing them are so light that a man can quite easily carry a log thirty feet long and a foot in diameter, and as a consequence they have a great floating capacity. The true balsa of earlier days was formed of five to seven logs, although we saw them fifteen logs wide, lashed together with that tough, pliant

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creeper, the *bejuco*, fastened to cross pieces of cedar or bamboo. Over all there may be laid a bamboo decking. The sail is hoisted on two mangrove poles, as there is no place for stepping a mast. When there is no wind, the crew uses a broad paddle in half sculling and half paddling, making slow progress. Sometimes there is a shanty on the balsa like the *wanigan* of the northern river driver. Its roof is the leaf of the *vijao*, something like the banana and also like the *tih*, but more pliable and tough. Now and then one may see a large balsa bearing a commodious and comfortable house containing several well furnished and decorated rooms. Big balsas are not only used as transports, but also as lighters and pontoons. The natives about Lake Titicaca make a fine balsa of twisted water grasses, as large as twenty-five by fifty feet, which they treat with pitch so as to make it really water tight. A hundred years ago it was common for the natives to voyage from Guayaquil to Payta, Sechura, Pacasmayo, and even to Huanchaco, beating against the wind and current for two hundred and fifty miles, weathering any kind of storm, — of which there are few, — having on board as much of a cargo as fifty tons, besides a big crew and their provisions.

These balsas could easily cross the Pacific, and it may have been by this means that the islands of the Pacific were peopled and an

entirely possible intercourse maintained between the continents, instead of with the big canoes of the Malayo-Polynesians or the Papuans, which are not so seaworthy and could not carry enough provisions for the long voyages. The balsa is the best craft ever developed by a primitive people for long voyaging, and arguing from this fact one might reasonably think that Asia was populated from America and not *vice versa*, as anthropologists and geographers so commonly contend.

America is so universally regarded as the new world, although the Azoic area is greater in North America than in all the other portion of the earth, that scientific attention has nearly all been devoted to moving man from Asia to all the other parts of the world. There is always a possibility that this hypothesis is wrong and that man originated in the new world and from there peopled the earth. In Curr's elaborate treatment of the Australian race, he endeavors to connect it with the African by noting some similarity of the primitive language of both peoples. Tongue, teeth, lips, nose, pharynx, larynx, palate, tonsils, and the entire machinery of speech are built upon much the same design in all races, and the first peoples everywhere made much the same sounds, just as all the parrot family do and the dog family and so on. This once granted, language resemblance can be discovered among

all the peoples of the earth, so many words are onomatopoeic or functional, including most of the labial and nasal sounds. All over the world *ba*, *pa*, and *ma* are used for "mother" and "father," often, however, with a transposition of reference. Some authorities contend that the early Australians were essentially Caucasian, and others that they are more nearly related to the Ainos, that strange, hairy, primitive race of Japan, or to the Khmers and Chams, of Cambodia. Not one has apparently tried to tie them up to the Andean races, although this would seem as fruitful a source of rational conjecture as any other. The deep, coppery or chocolate color, never shiny black like the African; the hair long, glossy, black or very deep auburn, often wavy or curly but never kinky, and the face not infrequently covered with luxuriant moustache and whiskers, sometimes of auburn hue too, give to both Andean and Australian a striking type in common.

In this connection it is more interesting than relevant to present the idea that there was an epoch, almost certainly, when the ocean waters of the earth were not connected and also not of common elevation, practically, as at the present. That was before the Arctic and Antarctic ice had receded and when great glaciers and ice beds belted the earth; when the Argentine Pampean sea was a solid mass of slowly moving, melting

ice. As the ice thawed and the land upheaved from internal forces and was then cut and carried by ice movements, the present form of the earth's surface evolved. But in that space of time, when the wind and ocean currents were finding their equilibriums and the oceans were segregated salty seas, the face of the earth was very different from what it is now. The continent of Atlantis, the highest part of which was the Azores, may have existed in what is now the Atlantic basin. Soundings made by the United States ship *Dolphin*, and also by the British ship *Challenger*, prove the existence of this great ridge (Dolphin's Ridge), twelve hundred miles across, which might easily have been the backbone of a continent. Plato and other ancient writers refer to something more than a mere myth that was known of the Atlantians at the earliest dawn of human records as we have them. Other modern writers have amplified the subject of Atlantis, and it is only referred to here because some of the conditions that could have wrought its destruction persist to-day.

And surely my conjectures are as rational as the Atlantis speculation, or the even less likely, but most interesting, theory of Dr. William F. Warren, that the earth was peopled from a circumpolar continent, now submerged, which once existed in the Arctic Ocean. True it is that many of the most momentous race movements have

been from the nebulous north. The ancient Greeks are traced to that unknown region, and Europe has been overrun several times by northern barbarians. The present dominant class in China moved down from the north somewhere. Then if the Arctic Zone is to have its advocates as the *incunabula* of the human race, there is no reason why the probable and entirely possible vitality, aggression, and courage of the ancient Andeans may not be referred to as having done their share in peopling and subduing mother earth.

The Atlantic Ocean was lower than the Pacific, as proven by the wide watersheds toward the Atlantic and the short slants to the Pacific. The clouds took up waters from the Pacific and the winds blew them over the mountains where the vapors were condensed and the rain fell in torrents into the Atlantic Ocean and upon the great sheds that drained it thither. This is the case to-day, with the great Amazon, River Plate, Orinoco, and the Mississippi, Ohio, Missouri, and St. Lawrence discharging into the Atlantic. The lower ocean filled up gradually and Atlantis was deluged, and also perhaps the region referred to in the Biblical description of the flood. Then openings occurred like the Straits of Magellan, from earthquakes or other cosmic influences, and the ice receded south of the Cape of Good Hope and Cape Horn and the oceans merged and arrived at a common level.

Some day the connecting channels of the Great Lakes of North America will have worn down, and they will have assumed the level of the ocean and will be briny.

Peru has a most unusual law in relation to money and it is well for travellers to know it. This law was enacted December 14, 1901, and was still in force in 1907. The chief feature of the law is given in Article No. 7, translated as follows:

“The introduction into the territory of the Republic of all silver and copper moneys is prohibited, so that those who wish to import same must do so by the port of Callao, giving due notice at the custom house, so that the administration may remit the coins to the mint to be made into ingots at the cost of the importer to whom they will be returned in that form.

“From April 1, 1902, passengers are prohibited from landing with more than ten soles, silver, in their possession, which amount is allowed for personal expenses.”

A former law limited the amount travellers might enter with to fifty soles silver. The law is for the purpose of forcing gold into the country and is said to be quite practically effective.

The South American countries generally have different monetary units, and have in circulation gold, silver, nickel, copper, and paper, the latter

both convertible and inconvertible. In the Argentine one thousand milesimos make a gold dollar of nearly the same value as ours, possibly three cents less. The exchange value of the paper is fixed by law at forty-four cents gold, at which rate gold may be received for paper at the conversion office so long as any gold remains. A statement in March, 1907, gave one hundred and one million dollars in gold in the conversion office, the largest amount on hand in the history of that financial department. Paper money may depreciate, but it cannot attain a greater value than forty-four cents, because that is the maximum amount at which the government will redeem.

In Uruguay there is a gold dollar worth one cent more than that of Argentina. Foreign coins circulate at their equivalent value, but there is no convertible state money. Some of the banks issue a small amount of notes convertible at sight. Brazil has gold milreis worth about eleven dollars in our gold for twenty milreis. The new bureau of conversion instituted by President Penna has already made for some improvement in stability. The paper conversion rate is thirty cents per milreis. Chile has a dollar worth about thirty-seven cents gold. The convertible paper money varies. It was worth about twenty-five cents in April, 1907.

Peru has a gold pound equal to the English

pound, or \$4.83 to \$4.86 our money, and also the silver sol, equal to two English shillings, or about forty-eight cents our money. Bolivia has the boliviano, worth the same as an Argentina gold dollar, or about ninety-seven cents. The silver boliviano is unstable and ranges from thirty-five to fifty cents gold. Paraguay has a gold dollar worth ninety-seven cents and a paper dollar worth about ten cents of our money.

A suit of fairly good clothes costs three hundred thousand reis in Brazil, or about one hundred dollars gold.

CHAPTER XVII

THE INCAS AND CUZCO

Incas Agrarian and Communal — Origin of Word "Andes" — Terrace like the Japanese — Pizarro's Operations — Fratricidal Strife between Huascar and Atahualpa — Cuzco — Caxamarca — Rich Huacas of the Chimus — Pizarro's Perfidy — Murder of Pizarro — Toledo, the Grateful — Time-tables and Routes to Cuzco and La Paz — The City of Peace — Trade Routes.

THE Incas were an agrarian people as well as communal. Their ancient farms may be seen yet wherever a valley darting back from the coast pierces the ribs of the Andes. These valleys were farmed intensely, and so great was the population and so earnest in their peaceful pursuit, that it may be safely stated that at the apogee of Incan civilization and prosperity there were more hectares of land under cultivation in South America than at the present time. Even the valleys are not now all utilized for agriculture as they might be or as they were by the Incas, as proven by the fact that the land most easily tilled in the basins was insufficient for their wants, and they were forced to attack the mountain sides in laborious and expensive

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reclamation work by terraces, just as the Japanese are driven to do to-day. The Incas even terraced to a greater height than the Japanese, and the beautiful mountain-side gardens of the Inland Sea of Japan are also a picture of what was the Incan tilth at the time of the arrival of Pizarro.

The ancient Incan terraces are called *andamios*, Spanish for "to walk," from the fact that they appear like steps up the mountain, and some scholars claim that the word "Andes" comes from *andamios* and not from the Incan Quichua word *anti*, meaning "copper," as others conjecture.

It is entirely possible that if there had not been dissension among the Incas amounting to armed dispute between the brothers Atahualpa and Huascar their theocracy would not have fallen so readily before Pizarro. However, this is not a very profitable speculation, because the Incan conditions went down before the assaults of the farthest waves of an approaching civilization more vital than theirs and supported by a stronger race, of which Pizarro was a more or less unwitting vehicle.

When Pizarro, the illegitimate, landed at Puna Island in the mouth of the Guayas River in 1531, after having landed at Tumbes at the mouth of the Tumbes River in 1527, now the boundary between Peru and Ecuador, he was informed that Atahualpa was at Caxamarca

and that his brother Huascar was his prisoner at Andamarca, about one hundred and twenty miles from Pachacamac. The ruins of the latter place are near Lima and are still interesting. Huaina Capac was the father of both Atahualpa and Huascar, born of different wives. The latter was born at Cuzco and his mother was the Empress Rava Oello, and the former was the son of Huaina by Paccha-chire, daughter of King Quito, who ruled over what is now Ecuador and from whom Quito takes its name. Huaina Capac had conquered Quito and then took his daughter to wife. When Huaina died at Quito, he left to Atahualpa the realm of his grandfather Quito, and to Huascar he left all of the other Incan territory with the condition that Atahualpa should subordinate himself, and do homage to his Cuzco brother as the legitimate descendant of the sun. Huascar planned to kill Atahualpa, as he looked upon him as illegitimate in every way. The younger brother heard of the plans, raised an army, took Huascar a prisoner, dethroned and imprisoned him, and had himself declared Inca of Peru and wore the red tassel which was the imperial insignia. This was the condition Pizarro found, and he took advantage of it to the everlasting destruction of the Incas, proving that old saying which has been so often proven before and since, that a divided house shall fall.

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There are ruins of Inca towns scattered from Cuzco to Manta in Ecuador, the chiefest of which is Cuzco, although here is an odd mixture of the old and the new. Most of the towns were built upon commanding elevations, healthful and easily defended. At Manta, where we procured a stone chair from a prehistoric council house, the ruins are at the summit of quite a mountain. The council chairs were carved out of pumice stone, with a rude face in bas-relief on the solid single leg in front under the seat, and are not uncomfortable. There is no back, as the shape is that of a cross section of a trough, a design affected by modern furniture makers.

The great palace of Cuzco is attributed to Manco Capac in 1109. The Temple of the Sun and the Palace of the Vestal Virgins are interesting. In Manco Capac's palace is a really artistic statue of a siren. At the mountain top is Fort Rodadaro or Sacsahuaman, supposed to have been built by Tupac Yupanqui. These children of the sun and of human sacrifices constructed their buildings of stone and built them well and they were artistic.

Cuzco was to Peru what Athens was to Greece. The Inca civilization was probably far superior to that of the Aztecs or the Toltecs or Chicimecs of Mexico and Central America, although such ruins as those of Mitla, in the state of Oaxaca, Mexico, prove that the builders of the time could

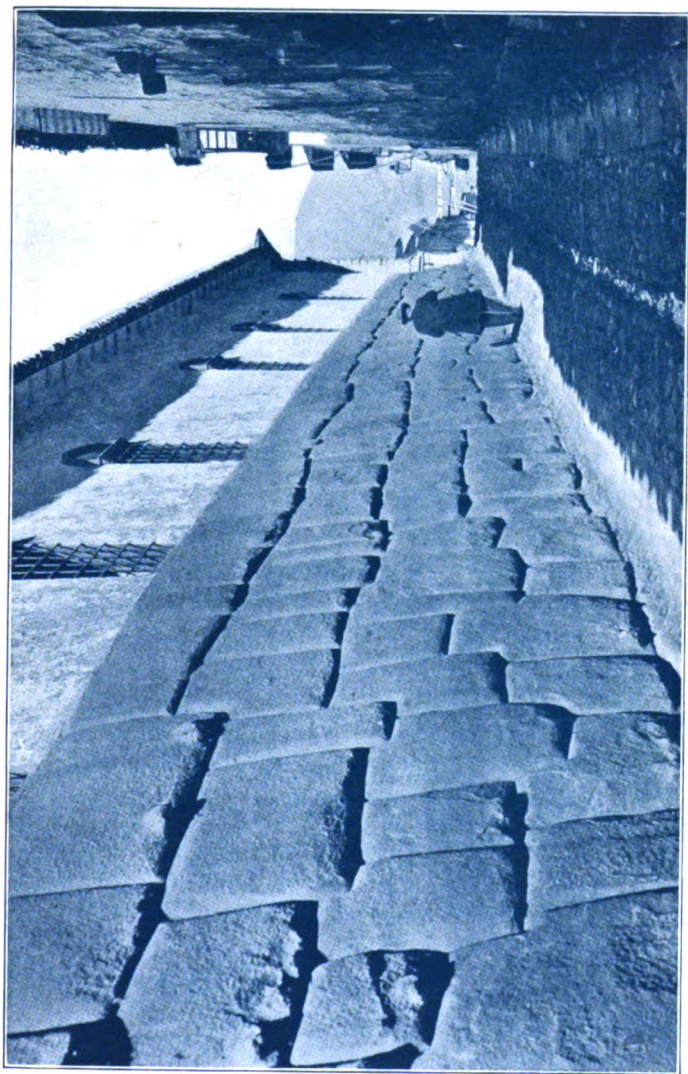
not be classed as inferior. It is reasonable to conclude that all these peoples knew each other in a sense and exchanged ideas. The Inca calendar stone is similar to the Aztec calendar stone, and the partisans of each contend that the idea is borrowed from the other.

The months on the calendar stone at Cuzco are as follows: January, Huchhuy-pocccay; February, Hatun; March, Paucar-huaray; April, Ary-huay; May, Aymuray; June, Inti raymi; July, Anta-asitua; August and September were both called the same, Capac-asitua; October, Cantarayquiz; November, Laymequiz; December, Raimi.

At Caxamarca or Cajamarca, capital of the Peruvian department of that name, five hundred and thirty-seven miles north of Lima, the ruins are fully as interesting as those of Cuzco. Atahualpa was confined in a room of the palace Astopilco at Caxamarca and he was garroted in front of the palace.

The mark he made on the wall of the room as high as he could reach above his head and to which point he promised to fill the room with gold if Pizarro would give him freedom, may be seen. Pizarro got the treasure, but it only hastened the death of the Inca.

Spanish historians give the amount of gold and silver Atahualpa gave his captor before he was executed at one million, five hundred and



INCA FOUNDATION WALL IN CUZCO

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ninety-one ounces of gold, and four hundred and ninety-eight thousand ounces of fine silver.

The followers of Atahualpa thought Pizarro was going to enthrone Huascar, to prevent which one of them struck Huascar with an axe and killed him.

Pizarro was murdered by his own countrymen at Lima, and his arch-conspirator and fellow-assassin, Father Valverde, was killed by the Indian Quispicancha, but not until after they had done all the harm they could.

The Chimu tribes of northern Peru were the wealthiest at the time of the coming of the Spaniards, and they had a custom of burying with the dead all of their movable property. Sometimes a common grave or *huaca* was given to many, in which case it would become a great cache of treasure.

In 1576 a Spaniard named Juan Gutierrez de Toledo opened a Chimu huaca in which he found gold to the value of nearly a million dollars. There were bars of gold and many household utensils made of the precious metal. Toledo was told of the huaca by an Indian named Tello whom he had befriended and to whose children he consented to act as godfather, a great favor from a white to a native to this day. After Tello had shown the treasure, he told Toledo he had only given him the "little fish," but that at some future time he would give

him the "big fish." But Tello died suddenly and the "big fish" is still a secret. It is believed by many that he referred to a large tumulus visible from Truxillo. This hill looks artificial. It is on the plain of Chimu and appears to be a mound of sand formed by pouring the substance from above as from a conduit of some kind leading from a great pocket or mountain of sand. Many have tried to dig it open, but the loose sand pouring down soon discouraged them. A well-timbered tunnel could be driven through the mound and many believe that a rich find would be made, which suggests a similar possibility referred to by Humboldt in connection with the huge dirt pyramid of Cholula, near Puebla in Mexico.

Toledo was grateful to Tello, and besides paying one-fifth of his riches into the royal treasury of Truxillo, as required by law, amounting to nine thousand, three hundred and sixty-two ounces of gold, and giving an official estimate of the whole find, he perpetually redeemed the Indians of Huanchaco from tribute, so that all they had to do, even if travelling, to avoid tax, was to carry a certificate of their birth and residence. Toledo's character is in fine contrast to that of Pizarro.

To go to Cuzco in the most convenient way, one must take the railroad at Mollendo, on the coast, which runs via Arequipa and the junction

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station Juliaca, to Sicuani and Cuzco. Trains run daily to Arequipa, where there may be a stop over, unless the traveller departs on the right day, for from there on to Juliaca and Sicuani the trains only run three times a week, on Mondays, Wednesdays, and Fridays. There may be a night also at Juliaca, where accommodations are not bad. From Sicuani to Cuzco the distance is a fraction over ninety miles by railroad survey, and is commonly stated at any number of miles between eighty and ninety by mule trail. In July, 1907, the railroad had been extended from Sicuani to Checacupe, some fifteen miles, and the stage journey to Cuzco was made in a day with galloping mules. It is still best to start from Sicuani if one decides to take an animal. Roads are good and mules can be obtained without trouble. Charges vary, but will average ten dollars for a passenger animal and six dollars for a pack mule, each carrying up to three hundred pounds. The mule journey from Sicuani is three days if taken at ease and is typical of South America; and as there is nothing to compare with it elsewhere in the world, it should be taken when at all convenient.

The modern and the ancient at Cuzco are in such juxtaposition as to present striking contrasts. The cathedral is imposing to a degree beyond the usual, and there are sixty other churches, beside eleven convents, several

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hospitals, a hotel and a club, a fine museum and library, four newspapers, a university founded in 1692, and a national college. The distance to Lima is six hundred and forty-three miles and to Mollendo two hundred and forty-five miles. The old plaza of the Incas has been cut into two smaller rectangles, which are surrounded by creditable buildings. Crooked streets are redeemed in a measure by their good width. Incan stone walls and foundations have been used generally as material for the modern structures. Not a little manufacturing is carried on, including cigarettes, beer, soap, cocaine, cotton and woollen goods, embroidery, leather, and sugar refining. The population is placed at thirty thousand, mostly Indians, and the Quichua language is commonly spoken, comparatively few understanding Spanish.

The Temple of the Sun, and the great fort and hill of Sacsaihuaman, also spelled Saxihuaman, seven hundred and forty feet high, are the chief ancient sources of interest. The country around Cuzco is fertile and is well watered by the Huatenay, Rodadero, and Almadena Rivers which join here. The Spanish influence in architecture is dominant and florid. The raucous shriek of the factory whistle, the rumble of machinery, and the small roar of traffic combine to disturb the dust of centuries that has gathered at the mighty seat of Manco Capac and Yupanqui.

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“So fleet the works of men, back to their earth again; ancient and holy things fade like a dream.”

TIME-TABLE, DISTANCE BY MILES AND KILOMETRES, ELEVATIONS BY FEET, AND FARES, MOLLENDO, TO AREQUIPA, PUNO, JULIACA AND SICUANI, GUAQUAI AND LA PAZ:

Fare, Arequipa to Juliaca, 12.20 soles: Arequipa to Sicuani, 20 soles; Puno to Guaquai, 16.40 soles; Guaquai to La Paz, 5.60 bolivianos; Mollendo to Arequipa, 6 soles; Arequipa to Puno, 14 soles; Juliaca to Sicuani, 7.90 soles. Trains daily for Arequipa leave Mollendo 9 A. M.

Arequipa to Puno, trains depart Mondays, Wednesdays, and Fridays at 7 A. M.

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MILES	KILOMS.	STATIONS	ALT. FEET
	Mollendo	6
9.25	14.6	Mejia	10
13.25	21.2	Ensenada	32
19.00	30.2	Tambo	1000
25.00	40.5	Posco	1830
29.75	47.5	Cahuintala	2493
34.75	55.5	Cachendo	3250
44.00	70.7	Huagri	3540
54.00	87.1	La Joya	4141
64.50	103.8	San José	4850
76.25	122.7	Vitor	5350
84.00	135.2	Quishuarani	6125
94.25	151.7	Uchumayo	6450
97.50	156.5	Huaico	6550
100.00	160.7	Tiabaya	6750
105.00	168.8	Tingo	7250
107.00	172.0	Arequipa	7550

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352 KILOMS. DIVISION AREQUIPA TO PUNO, 218 MILES

MILES	KILOMS.	STATIONS	ALT. FEET
	Arequipa	7,550
18.00	29.0	Yura	8,450
26.00	46.9	Quiscos (Aguas Calientes) . . .	9,500
44.00	71.0	P. de Arrieros	12,300
58.25	93.7	Cañaguas	13,380
68.00	113.4	Sumbay	13,403
96.00	154.5	Vincocaya	14,360
118.00	187.0	Crucero Alto	14,666
127.00	207.5	Lagunillas	14,250
145.00	225.8	Saracocha	13,940
148.00	239.0	Santa Lucia	13,250
155.25	250.8	Maravillas	13,000
168.25	272.2	Cabanillas	12,750
189.00	305.0	Juliaca	12,550
218.00	352.0	Puno	12,540

197.4 KILOMS. DIVISION JULIACA TO SICUANI, 122.50 MILES

MILES	KILOMS.	STATIONS	ALT. FEET
	Juliaca	12,550
14.00	22.5	P. Calapuja	12,565
	40.1	Laro	12,727
35.00	56.2	Pucarā	12,738
42.00	67.5	Tirapata	12,731
58.00	92.6	Ayaviri	12,807
82.00	109.0	Chuquibambilla	12,832
	131.5	Santa Rosa	13,100
	151.9	Araranca	13,540
	159.4	La Raya	14,150
	169.9	Aguas Calientes	13,250
	186.0	Marangani	12,000
122.50	197.4	Sicuani	11,650
90.10	Sicuani to Cuzco	

Fifteen miles from Cuzco is the valley of Urubamba, 9000 feet, where the Cuzco people of

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means resort in the Summer, although lower than Cuzco which is 11,969 feet above the sea.

Very compelling are the Inca fortifications of Ollanta and Tambo, located in this valley, and which are well worth a visit, inasmuch also as the route to and from is attractive in many ways.

The journey to La Paz, formerly difficult, is now by rail and steamer all the way, starting at Mollendo and going by way of Arequipa, Puno,* and Guaquai. Going to Cuzco the traveller changes at Juliaca; to Puno he simply continues on his way. Puno is on the shore of Lake Titicaca, 12,873 feet above the sea. Population eight thousand. A long pier extends into the shallow water of the lake where boats drawing six feet can only partially load, and are compelled to move out two miles in order to secure sufficient draught to complete their cargo. A fair steamer meets the train at Puno and carries the traveller to Guaquai by a devious route diagonally across Lake Titicaca something like one hundred miles. There are islands and shoals to be dodged and not infrequently a disagreeable sea that tries the sailing qualities of all on board. The trip may be made in the daytime with fine compensation, as the lake is not only beautiful in itself, but is made rarely picturesque by the panorama of volcanic peaks on the sky line.

* The details of the trip to Puno are given in the explanation of the route to Cuzco, page 180.

At Guaquai there is a railroad to Alta La Paz, a distance of seventy-two kilometres, and from Alta La Paz to La Paz, six miles, one may take an electric tram. Formerly the steamer route was to Chililaya.

With a population ranging from sixty thousand to one hundred thousand depending on the movement of the people, and an elevation of 12,470 feet above the sea, La Paz, "City of Peace," is one of the extraordinary human gathering places of the world. The town is in a kettle hole one thousand feet deep, with nearly vertical walls ten miles long and three miles wide. Only by a zigzag road three miles long can you get out of this peculiar environment. Five rivers, crossed by twenty-one bridges, some of them of ponderous stone and centuries old, flow through La Paz, and once the very town itself was a placer digging, for the Rio Chuquiapa was rich in gold. The other rivers are the Apumalla, Majahaquira, Caraivichinca, and San Pedro. The city is divided into nine districts similar to our wards, only more independent. The streets are narrow, steep, crooked, and run everywhere; there is very little level ground within the urban confines. Streets cross or intersect at acute or obtuse angles and the sidewalk is seldom more than a narrow stone ledge not much above the street, if any. Three iron gates give entrance to the quite creditable Alameda, which is one

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hundred and eighteen feet wide and eighteen hundred and four feet long. There are three compartments, one for walking and two for horseback riding, each separated by four rows of trees and shrubs. Another fine thoroughfare is the Avenida 12 de Diciembre. The Grand Plaza is unique in being paved with cobblestones so selected and arranged as to present designs in black and white. On one side of the square is the Bolivian Hall of Deputies and on another a showy cathedral.

La Paz boasts ten parks, which are little more than public squares. There are fourteen churches and any number of monasteries and convents, some of which occupy entire blocks, and many of which are now used as schools and military barracks. There are a national university, medical school, scientific school, military school, school of arts and trades, school of commerce, municipal museum, municipal theatre, public library, three banks, three hospitals, three fair hotels, seventeen newspapers and periodicals, thirty-six public fountains where the people procure water, partial sewerage, four breweries, and other public and private institutions. Houses are of stone or adobe, with delicate and pleasing tinting, often one story high in front and three or four in the rear owing to the unevenness of the ground, and they never have chimneys, as no heating is ever done and all cooking is performed

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outside. Terra cotta tiles and stone carving or grotesque stucco work mark the buildings, which seem to have little individuality aside from the usual baroque Spanish style, always a mixture of Arabian, Byzantine, Romanesque, and Norman, with nothing pure.

In addition to the railroad from Alta La Paz to Guaquai, there are several wagon roads and trails leading long distances to other points. One goes to Chililaya on Lake Titicaca, forty-seven miles distant; one to Oruro to connect with the railroad to Antofagasta, seven hundred and twenty-seven miles, of which distance the caravan road is one hundred and fifty-four miles and the railroad five hundred and seventy-three miles; one to Tacna in Chile, two hundred and fifty-seven miles, where there is rail connection for Arica, thirty-eight miles distant on the Pacific coast.

Work on a railroad from Arica to La Paz, the surveyed line for which is about three hundred miles long, has been begun and the claim is made that it will be completed by 1912, which is doubted by those familiar with the region and with the enterprise and those behind it.

There are three trade routes to the Atlantic: the Argentine route, which is 1762 miles long, 756 by road and trail to Jujuy in the Argentine, whence a railroad runs to Buenos Ayres, 1006 miles. One may also go to Buenos Ayres by

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the Paraguay River route, 2866 miles long, of which the road to Puerto Suarez where the river is attacked, takes up 1125 miles, leaving a really interesting and sometimes enjoyable river trip of 1741 miles. La Paz is 3538 miles from Para, Brazil, to which place one may travel 1080 miles by road and river to Villa Bella, and thence 2458 miles by river. These great routes suggest the caravan courses in Asia, or travel through northern China, or to Samarcand or Bokhara.

Nowhere in North America or Europe is there such a dearth of railroads, and that commerce should be able to flow through such stagnant veins in this impatient age proves that only half the world has *dementia commercialis*.

CHAPTER XVIII

ECUADOR

Neurasthenic Ecuador — The Royal Cordillera — Volcanic Centre of the Earth — Undetermined Boundaries — Uncertain Tenure of Presidents — The Guayas River — Floating Islands — An Embarrassing Incident — The Cacao Industry — Tropical Huts — Persistence of Guayaquil — Quito, the Beautiful — Settling of the Andes — An Ancient Mountain Road — Railroad to Quito — Santa Elena — Manta and Montecristi — How Panama Hats are Made — Ruins of a Cara Town — Tagua — Esmeraldas — Galapagos Islands — Darwin's Two Thousand Craters — Cacos Islands — A Mysterious Ocean Shoal.

ECUADOR, lying wholly within the tropics, is a land of mountain peaks, volcanoes and earthquakes, malaria, plague, yellow fever (a hundred cases and twenty-three deaths in April, 1907), smallpox, leprosy, and lesser physical things, and produces coffee, sugar, rice, cacao, tagua, rubber, Panama hats, and comic opera révolutions. Here begin the equatorial temperamental conditions that produce a form of neurasthenia which so affects the people of all Central America, Venezuela, Colombia, and

Ecuador, turning them into the most turbulent, belligerent, mercurial, unreasonable, irresponsible, and really strange white people, if by much license they can be called white, on the face of the earth.

Ecuador has the largest river, the Guayas, on the west coast; the largest gulf, Guayaquil, and in mountain peaks and volcanoes it surpasses the world; even upper India cannot compete. It is the home of Cotopaxi, 19,613 feet; Chimborazo, 20,498 feet; Antisana, 19,335 feet; Illiniza, 17,405 feet; Cayambe, 19,186 feet, and more than one hundred other peaks more than 15,000 feet in height, twenty-two of which, although on the equator, are perpetually snow-capped. The Royal and the Western Cordillera form nearly a perfect ellipse, about sixty miles wide at the point of greatest breadth and joined at the north by the Pasto Knot and at the south by the Loja Knot. So many rivers cut the western range that some geographers dispute the mountain connections, and also the effect of the huge valley is spoiled in a way. Of the mountain peaks in Ecuador, fifty-one are volcanoes. Surrounding the great Quito synclinal alone there are twenty-six volcanoes, of which twelve are classified as extinct, twelve dormant, and two active.

An apparently extinct volcano of to-day may be a very active one to-morrow, as Terawera, in

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New Zealand, which many supposed was not a volcano at all, proved when its top blew off and the very face of the earth was changed for miles around, including the growth of Lake Rotomahana from a mere pool to a seething, boiling lake of considerable proportions.

Cotopaxi is the highest volcano in the world. The shifting ash dunes of the volcano Sangai are sometimes over three hundred feet high and quite distinguish that great fire mountain.

Ecuador is conceded an area of 118,869 miles, divided into sixteen provinces and one territory, and a population of 1,275,600, which ranks it, next to Uruguay, the smallest of the republics in South America. However, if agencies should arise by which Ecuador might enforce title to all the territory it claims, some three times the area it is commonly given, matters as to size would be very different. The disputed boundary lines of the South American countries bid fair to be a source of contention for ages. There can scarcely be said to be one republic that has every limit permanently and satisfactorily determined.

The Ecuadorean montana, or plane east of the Andes, enjoys with Cherra Ponji of the foothills of the Himalayas, in India, the heaviest rainfall in the world.

One is not safe in stating the name of the president of Ecuador. General Eloy Alfaro, a courageous half-caste, held the position in 1907.

He is a fighter but not an executor. His career is filled with sensations. Once he escaped from his enemies by being headed up in a barrel and shipped. Emilio Estrada, ex-governor of Guayaquil, blacked his face once and impersonated a drunken sailor as a ruse to outwit his enemies. Lizardo Garcia, part negro, was president of Ecuador for four months in 1905. A revolution headed by Alfaro broke out January 19, 1906, and Garcia was soon unhorsed. He was accused of dishonesty, chased out of the country, and then formally acquitted provided he would remain an exile. Garcia's valuable cacao plantation, capable of earning \$30,000 a year, has practically become a waste, and his family is ostracized.

A mob without weapons started the so-called battle of Guayaquil in 1906 in which one hundred and twenty persons were killed. The mob intimidated the police and secured their arms. Almost at once the worthless, vagabond army, composed of impressed riffraff and innocent and ignorant natives from the hills, digested the situation and joined the winning side as it always does. These revolutions have developed a humorous etiquette that moves all parties to assist the loser to escape. The winner of to-day may be the loser of to-morrow and may wish to avail himself of the privilege.

Garcia made little resistance. He was not a

warrior, so he sent to Washington for General Plaza, his minister there, who obeyed the summons and at once returned to command the government army. When Plaza landed a great crowd assembled. He thought they had come to welcome him home, so when the people cried out "Vive Generale!" he removed his hat and bowed and smiled; then the name of Alfaro followed the "Vive Generale," whereupon Plaza restored his hat, sat up stiffly, and looked both serious and sorry. Alfaro was already in the saddle.

No sooner, however, was Alfaro established than persons began to stir up another revolution, and so it goes. Alfaro is considered honest by friend and foe, but his enemies say that he is surrounded by a gang of thieves who hoodwink him, or to whose peculations he is willing to be blind and deaf.

In the Spring of 1908, many Panama hat weavers fled to the mountains to escape army service either for or against Alfaro, and the industry seriously felt their going.

A favorite way for the government to raise extra funds is to borrow of foreign merchants and pledge certain customs as security, giving as an evidence to the creditors a form of customs script. It is not policy to refuse assistance to any government, and not infrequently subscriptions are made to insurgents and to the

established government also, dollar for dollar. And so the land is full of intrigue and turmoil all of the time. Romanism is the state religion and Protestantism is barely tolerated.

The Guayas River, on which Guayaquil is located, eighty-five miles above its true mouth, is the largest river on the west coast of South America, and in this respect compares to the Columbia of North America. At its mouth, or at the point generally considered as such, the Guayas is forty miles wide. There is a tide of twelve feet, and at high tide the river is salty and at low tide fresh. The Guayas is formed by the union of the Babahoyo (also called Zapotal, Grand, Caracol, and Rio Bodegas) and the Daule Rivers, near Guayaquil, both very large streams, and the former the larger. The Babahoyo River is navigable to the town of Babahoyo, five days upstream from Guayaquil, or about two hundred miles. All the big coastal streams teem with the deadly *cayman*.

When the tide runs out of the Guayas it carries a burden of *débris* like all tropical rivers, and the sight of large floating islands bearing palms and bamboo and other vegetation, on their way out to the sea, is beautiful and interesting and almost mysterious. Some of these floating islands are washed back and forth by the incoming and outgoing tides for years before they reach the sea or are disintegrated. So toughly are the roots

intertwined that the larger and stronger islands would sooner or later block the river if the great floods did not carry them finally to the ocean, where the sea water may prove death to the fresh water vegetation.

The ruling depth for ships using Jambeli channel of the Guayas is furnished by a bar at the foot of Mondragon Island, which has sixteen feet of water over it at low tide and twenty-eight feet at high tide. At high tide the river will accommodate all ships. Of the many islands in the Guayas there are Mondragon, Matorillos, Masa, Santay, Palo Santo, Green, and Puna. Santay is the island just below Guayaquil. Puna, where Pizarro landed, is the largest island and is located where the Guayas debouches into the Gulf of Guayaquil. There is a lighthouse at Mandinga Point, on Puna Island, and the town of Puna, where the pilot and doctor and other officials board the entering ship, is on the island.

An awkward incident that befell our ship at Puna illustrates the sensitiveness and general character too, maybe, of the Ecuadorean. The gangway had been lowered, the visiting officials had come alongside accoutred in gold lace and swords and awful dignity which nothing less than a gallon of *aguardiente* would melt. Just at the critical moment, when they were all perfectly in range, a most thoughtless steward, who could not see through the walls of the ship and

did not even know that the gangway was down, and would not have indulged a precautionary thought anyhow, emptied a great tub of slops through the only porthole by which every one of the august visitors could have been deluged. The slimy, greasy, foul stuff went as straight to its mark as though shot from a twelve-incher aimed by a Yankee gunner. Not a spot of man or uniform escaped, and a fall into a swollen sewer could not have wrought a worse effect. Such a spluttering and fist-shaking and raging! Only an abject personal apology by the captain, followed by a formal written one to the government, and the parade of the poor steward in irons before the eyes of the bemused officials with the assurance that he should be tortured and then shot, prevented war. After some hours' delay caused by the mishap, Dr. Lloyd of the United States Marine Hospital service, who had been an intermediary, managed to get the officials to come aboard, whereupon plenty of champagne and other peaceful overtures closed the incident. Dr. Lloyd lives in a mosquito-proof house in Guayaquil. He is a good diplomat as well as a good doctor.

Several rivers, among them the Chongon and the Boliche, flow into the Guayas between Guayaquil and the ocean, and there are almost countless *esteros*, which latter may be bay, inlet, or bayou.

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The Guayas and Babahoyo and Daule regions have been famous for cacao for more than a century. The bean grows in a pear-shaped pod and varies in quality, which accounts in a measure for the differing grades of chocolate. Much of the best of it goes to Holland. Guayaquil exports more than four hundred thousand bags of cacao each year, valued at over ten million dollars. The best cacao is the Arriba, which is a general name for that which is grown above Guayaquil, and especially from the province of Los Rios, in the Babahoyo valley. The inferior cacao, which is grown in the Puna district below Guayaquil, includes the well-known "Balao," "Machalla," and "Tenguel" varieties, for which there is good demand at a lesser price.

The cacao tree is about the size of a cherry tree. Sometimes cacao trees are started in nurseries and transplanted. Another way is to plant the seeds where the orchard is to be permanently located. Lofty trees are left in sufficient number to protect the young cacao trees. The method of planting in the open is to place the beans fresh from the pod, in pairs, on the ground, fifteen feet apart, and over them put a little soil and cover them with a bent plantain leaf to break the intense rays of the sun and to ward off the beating rain. Bananas and plantains are cultivated between the rows of cacao, and not only supply needed shade but are

profitable, often defraying the expenses of a growing plantation. Until the cacao tree reaches a height of four feet all limbs are trimmed off, leaving the trunk smooth. Then three or four branches are permitted to grow symmetrically, from which all leaves and adventitious sprouts are removed, and thus the tree reaches a height of twenty feet.

When the cacao tree begins to bear, on an average of three years after starting, numerous caterpillars assail it. One of these pests is a great belted fellow in black and yellow and four inches long. The young trees would not survive unless assistance were rendered, so there is alert search for these worms. Then when the fruit is ripe armies of covies, monkeys, parrots, and squirrels swarm into the plantation and play havoc. Only guns will dislodge them, and even then they are not easily driven away permanently. Some of the monkeys are so bold that they will throw pieces of limbs and husks at the person who may be trying to put them to flight.

The cacao blossom is white, without the delicate tinting of the apple blossom. It is attached to a very short stem and appears to be directly upon the bark like a button. The cacao pod is pear-shaped and yellow when ripe. In one variety the pod contains from forty-one to forty-four beans, and another contains from twenty to thirty beans closely embedded, in five rows, in a

soft, moist, almost downy substance, immaculately white and of pleasant subacid taste. The harvests are in June and December, but some planters gather the pods throughout the entire year as they mature.

Snakes and fireflies infest the plantations, and the latter are so brilliant as to almost permit of the discovery of the former in the night time. Generally speaking, the cacao of Ecuador is not as good in quality as that of Venezuela, being larger and dryer and more bitter.

Linnæus calls cacao *theobroma*, "the beverage of the gods." Cacao is a Quichua word and has maintained itself in spite of its similarity to cocoa.

Near the entrance to the Guayas River is an interesting and unusual rock, El Amortajado, — "The Shrouded Corpse," — called so from its very strong and unmistakable resemblance to a shrouded friar. At a distance of something like three miles the figure defines a striking outline of a recumbent monk, head, body, feet rising just enough, and arms folded across the breast, all just as though the good man were sleeping or awaiting interment.

Guayaquil has a population of sixty thousand. The approach to the city by river, fringed with bamboo, algaroba, mangle, and mangrove trees, reminds one of the Pasig, above Manila, only there are more trees on the Guayas. Native

houses built high off the ground and thatched with great palm branches interwoven between ribs of bamboo like all tropical dwellings, line the banks of the river, and sometimes there are clusters denoting a village. The air sweeps under, over, and around these shacks, keeping the miasma in motion, even if that driven away is immediately replaced by the surcharged atmosphere. Fragile as they appear, the natural native houses withstand the earthquake, flood, and tornado better than any other kind of a structure of nearly equal cost. Canoes of roble, figueroa, and cedar, thirty feet long and narrow, shoot down the swift tidal current of the Guayas or steal slowly along shore where eddies of the least resistance may be found in the fight up stream. There are many clumsy balsas which move up and down with the tide, never attempting to buck the current unless the wind is fiercely fair.

One watches every mosquito in order to avoid these messengers of yellow fever, and on shore it is well to seek mosquito-proof houses, of which there are a few. The yellow fever mosquito cannot fly far with his cargo of poison, so if one remains a quarter of a mile from the nearest case he need not fear contamination by any means. The difficult thing is to know your distance.

A kind of earthquake-cyclone architecture

peculiar to Guayaquil permits the walls of buildings to bend and give without necessarily breaking. There is great strength with the least rigidity. Upon a very low stone foundation heavy lignum vitæ timbers are laid. Ponderous uprights and stringers are bolted together. Slender, pliable strips fill the intervening spaces just full enough to permit of split bamboo being interwoven. Then elastic mats a foot wide made by binding split bamboo together with tough withes are placed on the outside as a covering. The outside is plastered and tinted and ornamented to suit the taste, which is often barbarous. Rude arcades over which are latticed galleries are common. Ceilings and walls are covered with cotton cloth stencilled or really frescoed. The floors may be either flags of stone, tile, or polished wood. Many families live on floating balsas, moored to rise and fall with the tide. The bamboo houses on these balsas remind one of the house junks on the Yangtse-Kiang, only that they are really brighter and cleaner, which is not claiming much when one considers that Mr. John Chinaman in low life is the most unclean human on the face of the earth excepting none.

Very wholesome water is brought to Guayaquil in a single eight-inch pipe from the mountains forty miles away. About a mile and a half back of the town, connected by tram, are sea

baths supplied by a natural canal that parallels the Guayas River all the way up from the sea.

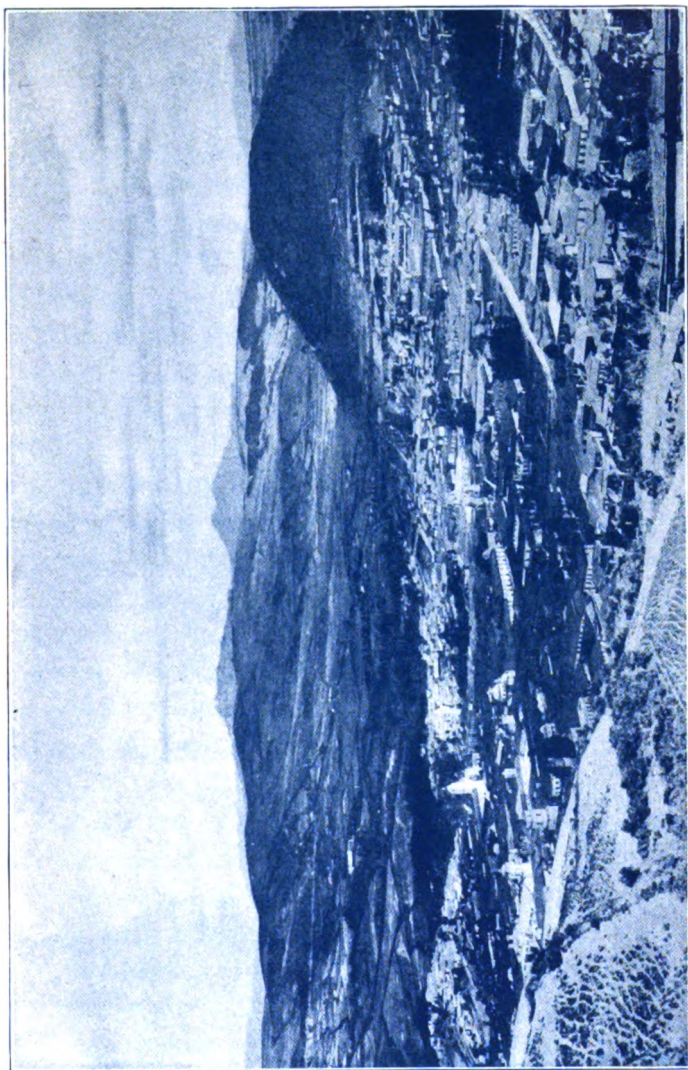
Guayaquil must be a natural site for a city, for since July 25, 1531, when it was founded, it has been repeatedly destroyed by earthquakes, fires, pestilence, cyclones, civil war, and pirates, only to be as often rebuilt and each time a little better. There are parks and cathedrals and theatres, stone-paved streets, eleemosynary institutions, nineteen newspapers and other publications, shops, factories, hippodrome, and all of the appointments of a city, even if it is one of the least healthy spots on earth. Sailors who are required to row their captains ashore and then wait for them in the cutters are often the victims of yellow fever in its deadliest form. Passengers are not allowed to land from any ship until they have been away from the last foreign port touched at for five days. If the ship does not remain in port long enough to permit of this lapse of time, the passenger has the alternative of going to an old detention hulk or proceeding to Manta, or somewhere else, and returning later.

The common coin of Ecuador is the sucre, named for General Sucre, Bolivar's brave associate, who won the decisive battle of Ayacucho, Peru, December 19, 1824, where the Spaniards made their last stand of any consequence. The coin bears a bas-relief of Sucre and is worth about fifty cents of United States money.

Quito is the capital and the mountain gem of Ecuador. It is two hundred and forty miles from Guayaquil, twenty miles from the equator, has an elevation of 9543 feet and a population of eighty thousand, and lies in a ravine at the base of the extinct volcano Pichincha, whose crater is in the clouds, 16,500 feet above the level of the sea. The Rio Machangari flows by this ancient city. The history of Quito is lost. It was a strong fortress when captured in 1470 by the Incas, long before the arrival of the Spaniards. From Quito the mountain scenery is sublime and beautiful. Eleven snow-capped peaks glistening in the tropical sun dazzle the senses. Cloud and sky and mountain top are so wedded as to be ocularly inseparable.

Some geologists claim that the entire earth crust of the Andes is very gradually settling, from the fact that Quito has twenty-six feet less altitude than it had one hundred and twenty-two years ago, and Mt. Pichincha has sunk two hundred and eighteen feet during the same period. On the other hand, Cotopaxi is said to be higher than it was one hundred years ago.

An ancient mountain road, fifteen hundred miles long, one of the greatest works of the Incas and compared by some over-enthusiastic admirers of them to the feat of building the Great Wall of China, once connected Quito with Cuzco. It can still be traced all the way, and



PANORAMIC VIEW OF QUITO
The Capital of Ecuador

may frequently be followed where it has endured perfectly.

There is a great deal of dysentery, aside from which the city is healthful. Persons with yellow fever if moved from Guayaquil to Quito always recover or die before reaching the latter place, and the chances are about even.

Ice and good water are obtained from Mt. Pichincha. Quito is an ambitious place. There are five public libraries, two museums of natural history, a university, four colleges, and many other public institutions, including a large hospital for lepers. There is a school for boys and girls, started for the government by W. T. Robinson, of Ohio, a missionary of the Methodist Episcopal Church, prominent and successful in the South American west coast field. This school is not, however, a Protestant institution.

There are great downpours of rain, amounting often to cloud-bursts; and severe electrical storms, frequently fatal, are of common occurrence.

There is traffic in children at Quito and young girls become wet nurses as an ordinary avocation. The native women of Quito and environs are strong and industrious. We saw one woman with five bundles of fodder fastened on her back, a babe in a sling hanging from her neck in front, and her hands cleverly engaged in spinning brown cotton or wool on a spinning stick which

she used as deftly as an East Indian juggler. Other women were laying cobblestone pavements in the streets, others were grinding mortar between stones for adobe walls, and still others travelled about the city with huge baskets on their heads, peddling monkey-teeth necklaces, brilliant plumes of tropical birds, humming birds, and many other things their keen wits had captured or prepared.

One may go by river sixty miles to Bodegas and thence by mule to Quito, an interesting journey of five days from Guayaquil. The trail from Bodegas passes through Guaranda, population six thousand, Ambato, and Latacunga. Ambato has a population of eight thousand, and the claim is made for it that it is the most beautiful town in Ecuador. It was destroyed by the eruption of Cotopaxi in 1698. Latacunga has a population of ten thousand. It is only eighteen miles from Cotopaxi and from time to time suffers from eruptive ejecta in the form of mud and water. Both places export pumice stone and medicinal barks.

For years a government railroad with a five and one-half per cent grade has been building from Guayaquil to Quito, and despite internal disorders and poverty it was operating one hundred and eighty miles in 1907. The railroad starts at Duran, across the river from Guayaquil, and runs as far as Ambato, passing through

Chimbo, Yaguachi, Milagro, Naranjito, Sibambe, Alansi, and Riobamba, past the bases of Chimborazo and Cotopaxi. From Ambato one may continue on to Quito, sixty miles, by either automobile or coach. Formerly the fare to Quito from Guayaquil, when one went most of the way by mule trail, was one hundred dollars gold. This has been reduced to thirty dollars gold by rail, and then by coach or auto as the traveller prefers. The railroad journey requires one and one-half days by day train and one day by automobile. No trains run at night. Practically three days are consumed in making the trip one way, but the traveller is richly repaid.

It is locally claimed that the monastery of San Francisco at Quito, which owns and operates rich plantations and does other business, is the largest in the world. Fine blankets, ponchos, and bayetos are made in Quito.

Near Santa Elena, north of Guayaquil, are valuable salt deposits, which are worked by the government with methods that would be regarded as obsolete in Michigan, where salt is won and refined upon a larger scale and by more modern methods than elsewhere in the world. Santa Elena has a population of fifty-two hundred and is two miles from the coast. It is served by the seaport of Ballenita, at the entrance to the Gulf of Guayaquil. Petroleum is found in the neighborhood.

Between Ballenita and Manta is Point St. Elena. It is one of the most prominent headlands on the west coast and is emphasized by a low-lying background. There is a strong resemblance to Gibraltar. A wild surf beats at its base as the white-maned chargers dash in majestically and roll back in confusion only to keep on until the end of the world. A lighthouse on the point can be seen at sea for twenty-five miles.

The Panama hat, so called, reaches its greatest perfection in manufacture in the Manta region. The hats of Montecristi are most famous. Manta is the port for Montecristi, nine miles inland, and also for Jipijapa, Santa Ana, and also somewhat serves Portoviejo, the capital of the province, forty miles distant. Once profitable pearl fisheries flourished along this part of the coast of Ecuador, but they are now in a low state.

Panama hats, the good ones, are made from the shredded fibre of a certain palm leaf that grows back in the mountains. Their making requires the special arts of knowing the palm, gathering it at the right time, preparing the fibre, and then weaving under such conditions as will bring the best results. A first-quality hat consumes the time of one person for four months, because the plaiting is done only in the morning and evening and at night when the moon is at



INDIAN WATER CARRIER AND FEMALE INDIAN BRUSHWOOD CARRIER OF QUITO

full and brightest. These hours are chosen because there is just the right humidity in the air to bring the hat fibre to the most perfect condition of pliability. A good hat should present very nearly the same appearance on both sides, should show nine to twelve plaiting rings in the top of the crown and should submit to being crumpled in the hand like a handkerchief without leaving wrinkles. The very finest hats feel like silk, but do not wear as well as those that are made of somewhat coarser fibre. Most of the hats are made for local dealers like Voelcker Hermanos, at Manta, who receive from five to sixty dollars for a hat, but the native weaver does not get so much, it is needless to state.

Manta has a population of two thousand people, of whom fifteen are Germans and one a German-Englishman. There are no Yankees. The town is not unhealthy. Ten or twelve miles from Manta are the ruins of an Indian fastness supposed to belong to the once powerful and highly civilized Cara tribe. At the summit of Cerro de Hoja, a steep, flat-topped mountain, is a large stone table surrounded by carved stone chairs, all of which have been chiselled out of pumice. It is estimated that the table weighs forty tons. It may have been used for feasts, sacrifices, or council.

Tagua, or vegetable ivory, is shipped from Ecuador ports in considerable quantities. Most

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of it goes to Hamburg for button-making. Tagua is a palm nut enclosed in a blackish-brown shell, nearly round and an inch or so in diameter. Although very hard and when mature resembling bone or ivory in texture, it is tender and edible when young.

Esmeraldas is the port furthest north in Ecuador. Capital from the United States is doing its best to get gold in the region back of Esmeraldas, and especially in the districts of Santiago, Cayapas, and Cachavi. Once emeralds of poor quality were mined and this gave the port its name. There are six thousand people, and the region is rich and would thrive if political conditions would remain stable for a season or two.

The little port of Bahia, with submerged rocks in the offing which make it a terror to sailors, is one hundred and thirty-seven miles south of Esmeraldas. It is a very famous cacao region. A railroad to Quito is the unrealized dream of Bahia, which has, however, a very good mountain trail to the capital.

Ecuador's one territory comprises the Galapagos or Tortoise Islands, on the equator, six hundred miles at sea, where a big tortoise shell industry once flourished until the tortoise (*testudo indicus*) became almost extinct. From time to time there has been a report that the United States would purchase the Galapagos because of

their strategic value with relation to the Panama Canal. During the great cruise of the sixteen fine Yankee battleships from the Atlantic to the Pacific, Winter of 1907-8, the U. S. S. *Yankton* was ordered to visit the Galapagos, ostensibly to look for a marooned sailor, but really, it is thought by some, to make an examination of the islands for the authorities at Washington.

There are six large islands and nine small ones, besides almost innumerable islets, lone and nameless rocks. Dangerous currents swirl between the islands, caused by tidal movements and by the friction here of the Humboldt and Panama ocean streams. On the south side of the Galapagos the Cape Horn current keeps the sea water down to a temperature of sixty degrees Fahrenheit, and on the north side the Panama current asserts itself and the water is eighty degrees. The islands are volcanic with a surface of tufa, lava, sandstone, and heat-glazed granite. Darwin counted two thousand craters. Albemarle Island, the largest of the group, is seventy-two miles long and fifteen miles wide, has a mountain forty-seven hundred feet high, and Progreso Colony, on Wreck Bay. Chatham Island is twenty-four miles long and has a population of three hundred. Other named islands are Indefatigable, Narborough, Wenman's, Barrington, Floreana, Hood, Abington,

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Bindloes, Tower, and Duncan. There are many wild cattle, pigs, donkeys, goats, and dogs, all wild, on the islands. High zoölogical interest centres about the group because of the alleged existence of species of animal life not found elsewhere. There is a little sugar-raising and fishing and some crude sawmills.

Northeast of the Galapagos, about three hundred miles, lie the Cacos Islands, named from the Spanish word "caco," meaning "pick-pocket." They are in latitude $5^{\circ} 32' 57''$ north and longitude $87^{\circ} 2' 10''$ west. Admittedly the Cacos were headquarters for the buccaneer, Morgan, who ravished the west coast, exacted tribute with a high hand, and among other deeds sacked and burned Panama when at its richest. The main island is thirteen miles in circumference and is the only real island, the balance of the group being mere reefs. No end of treasure hunters have visited the Cacos, and some plunder has been found. Novel writers from Robert Louis Stevenson down have immortalized the islands as the lair of pirates and the scene of their wild orgies and bloody acts. Plenty of wild cocoanuts grow on the Cacos, and there are also wild pigs.

Not far from the Cacos and between them and the Galapagos, is the mysterious Rivadeneyra shoal, said to be in latitude $4^{\circ} 15'$ north and longitude $85^{\circ} 10''$ west. It was reported by a

French captain in October, 1842. Since then it has been unsuccessfully searched for by the U. S. S. *Mohican* in 1885 and by the British war vessels *Cockatrice* and *Havana*. Most navigators think the Frenchman saw the "Flying Dutchman," but they give the reported locality of the shoal a wide berth. All of the shoals and dangerous places of the oceans are not known by any means, or there would not be so many ships that are never heard of after sailing. Each year has its sad record of mysterious tragedies on the great waters.

CHAPTER XIX

COLOMBIA AND VENEZUELA

Colombia — Unexplored Rivers and Forests — Bogota — Barranquilla — Venezuela — Caracas — La Guaira — Puerto Cabello — Ciudad Bolivar and Maracaibo — Story of the Venezuela Asphalt Trouble — Castro in the Right — Bajo and Alto Llanas — Lakes Maracaibo and Tacarigua — Great Floral Range in South America.

BEFORE the secession of Panama, the Republic of Colombia had a coast line of sixteen hundred miles on the Pacific and eighteen hundred miles on the Caribbean Sea. The loss of Panama cut the coast line down to about one thousand miles on each side. A hundred years and more ago it formed, together with Venezuela and the Guianas, the Kingdom of Tierra Firma, which lay to the north of the Kingdom of Granada. At that time it is certain that there was more unknown territory in North America than in South America, which is hard to comprehend when one considers and compares developments since then.

There are three Andean ranges in Colombia, a veritable confusion of mountains, cutting the

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republic into valleys and table-lands or *paramos* of varying altitudes and making for a flora and fauna that range from tropical to frigid. Un-navigable streams flow through unpenetrated forests, dense thickets, and fertile prairies in every direction, forming a rare diversity of landscape. Among the riches of the forest are dyewoods, rubber, quinine, ipecacuanha, and sarsaparilla. Brilliant insects vie with bright flowers, while rare orchids are widely distributed. There is much evidence of mineral wealth in the mountains. The great drawbacks are the restlessness of the people, and the absence of natural channels for transporting the products of the country to market.

Bogota, the capital, has not been commonly called Santa Fe de Bogota for many years. It is really a beautiful city, of 120,000 population, situated in the northwestern portion of the department of Cundinamarca upon a fertile plateau 8680 feet above the sea. The city was founded in 1536 and had come, by 1598, to be the capital of the New Granada. There are short railways radiating from the city to Focativa, twenty-five miles, Zipaquira, thirty-seven miles, and to Soacha, seven miles. An express service by horse connects Bogota with the Magdalena River, whence one may go to Barranquilla. Regular steamers ply between La Dorada, on the Magdalena, to Barranquilla, a

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distance of 592 miles. The nearest route from either coast to Bogota is to start at Buenaventura, on the Pacific, and go via Cali.

Buenaventura is at the mouth of the Rio Cauca, 355 miles south of Panama. A railway reaches San Jose de Cauca, twenty-five miles, or a third of the distance to Cali. From San José de Cauca one may go on to Cali by horse or mule, or possibly at times by automobile. The journey to Bogota from Cali is by mule over rough roads and past dizzy chasms, crossing many mountain passes, the highest of which is eight thousand feet. Most of the inhabitants of Colombia, which is given a population of 3,593,600, live in the interior where no one can get at them easily, making it equally difficult for them to get at anybody.

Buenaventura has a population of 5000 and Cali has 16,000. Small steamers run on the Cauca River at Cali.

Next to Bogota the most important city in Colombia is Barranquilla, with a population of 40,000, situated near where the Magdalena River flows into the Caribbean. It is a poorly equipped port, which forces most of the sea trade to Sabanilla and Puerto Colombia, both connected with Barranquilla by rail. Houses of the poorer class are made from *guadua* cane, smeared with clay, and roofed with rushes. Better houses are built of wood and brick, with tile roofs.

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Barranquilla is only a sail of 1482 miles from New Orleans and 1897 miles from New York, making an ideal warm sea trip in the Winter, supplemented by a sail up the Magdalena. The town was founded 1629. There is a large foreign population which is gregarious.

During the last few years, Venezuela has made more of a disturbance and strained the Monroe Doctrine more than all of the balance of South America. Beginning with the Cleveland administration in the United States, Venezuela has been in the spot-light most of the time and is still there at this writing. The country has a greater area than Colombia, but not so many people, being credited with 2,444,816. It has a coast line on the Caribbean of two thousand miles and in size compares closely with Alaska, and is nine times as large as the State of Michigan. So is a cabbage larger than a diamond.

The Orinoco River, third in size in South America and ninth among the rivers of the earth, belongs to Venezuela. Only some of its western branches pierce the boundary. The Orinoco is 1450 miles long and empties into the Atlantic at a point about five hundred miles from its source in a straight line. Where the Rio Apure joins it, three hundred and fifty miles from the mouth, the Orinoco is nearly five miles wide.

The *presidente* is elected for a term of six years, when he is elected at all, and does not get

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in through the way of bayonet and sword, which influence is apt to keep him in office without regard to constitutional length of term.

Caracas, the capital, has a population of 75,000. It was founded in 1657 and has repeatedly suffered from earthquakes, notably in 1595, 1766, 1812, 1826, and 1900. Lying at an elevation of 3018 feet, it appears as though encircled by mountains. The water supply is piped twelve miles. Prominent edifices which give one some idea of the character of the city are the government palace, yellow house, capitol, city hall, post office, orphan asylum, Vargas, military, and Linares hospitals, House of Beneficence, Foreign Relations building, Caracas and Grand Municipal theatres, arsenal, national museum and library, San Pablo and principal markets, National Pantheon, cathedral, San Francisco Temple, Masonic Temple, archiepiscopal palace and university. There are eight clubs, eleven hotels, and several banks; thirty-six newspapers and other publications, horse street railways, and electric lights. There is rail connection with La Guaira, Valencia, Los Tequee, and La Luz. Caracas in a straight line is only about two miles from the port of La Guaira, but the railroad takes twenty-three miles to find its way and make the climb.

La Guaira is the chief seaport of Venezuela. It reposes at the base of Mt. Avila which rises

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eight thousand feet almost abruptly from the sea. The aspect is barren and severe and is only relieved by a few clumps of cocoanut palms. The population of La Guaira is eight thousand. It has a fair harbor, to the natural protection of which has been added a breakwater six hundred and eighty feet long, enclosing a basin of about ninety acres. The bubonic plague raged here in 1908 and claimed many victims.

The best harbor of the country and one of the safest in the world is that of Puerto Cabello, "Port of the Hair," to convey the idea that a hair will hold a ship if anchored in the harbor. The town has a population of fifteen thousand and is prettily situated on a peninsula about one hundred miles west of La Guaira, the point of which is broken into islands that prolong into the Golfo Triste in a way to form a complete enclosure with entrances between the islands. Deep water holds clear to the steep banks of the shore. Puerto Cabello boasts of the draining of a lot of stagnant lagunas that surrounded it, and equally celebrates the defeat of a small English squadron that attacked the town in 1743.

Ciudad Bolivar, formerly called Santo Tomas de Angostura, on the Orinoco, 373 miles above its mouth, population 12,000; Maracaibo, on the strait connecting the two parts of Lake Maracaibo, population 35,000; Valencia, on the Rio

Cabriales, state of Carabobo, population 38,000; Barquisimeto, on the river of the same name, population 32,000; La Grita, 14,000 population; Barbacoos, 13,000 population, and Barcelona, 12,800 population, are some of the more important towns of Venezuela. Ciudad Bolivar is famous for its cigar industry controlled by the Germans. Maracaibo makes a fine rum and has marble and asphalt and some gold, silver, coal, and iron ore.

There are many asphalt beds in Venezuela, but the most extensive and valuable and most accessible probably are in the *estado* Bermudez. At least the Bermudez concessions are the ones most in the public eye as the source of the asphalt troubles with Venezuela. The asphalt tangle is a complex one, and although the United States has endeavored studiously to solve the problem with justice to all, not much progress has been made up to this writing.

In 1888 a Yankee named Hamilton obtained from the then President Blanco of Venezuela, a concession running for twenty-five years, and permitting him to develop and sell the forest products and the asphalt of the several asphalt lakes on the government domain in the state of Bermudez in consideration of certain government improvements he was to make. President Blanco figured that the government would also get compensation by taxing the products as

they passed the boundary in export. Hamilton organized the New York and Bermudez Company, in New York, and with the consent of Venezuela the concessions were conveyed to this company. Understanding the mutations of the republic, the New York and Bermudez Company sought to strengthen its position wherever possible, in pursuance of which policy it selected a certain asphalt lake and also a definite area of public lands and paid cash for them, securing a patent under the land and mining acts. It was then in shape to do business and sold out to the so-called American Asphalt Trust. A little later two Yankees named Warner and Quinlan, who were in Venezuela, detected an alleged flaw in the title secured by Hamilton's company under the land acts, and discovered this to the Venezuelan government, obtaining its sanction to a claim they filed on the valuable asphalt lake in question. Litigation followed and the Venezuelan courts threw out Warner and Quinlan.

About this time the fiery Cipriano Castro appears on the scene, not as the successor of Blanco, but of the timid President Andreas, whom Castro had frightened out of his wits and his position at the same moment. The political conditions took on a new phase. Castro sought through legal channels to annul the Hamilton concession upon the apparently

reasonable grounds that it was inimical to public policy; that no compensation had passed except for a limited portion of the area comprehended; that the great and only reason for granting a concession had been to secure a general development of the state of Bermudez, that nothing had been done to earn the huge grant, and that the *concessionaires* had specifically failed to improve the Guarapichi River within the time and in the manner agreed upon.

It is commonly conceded that President Castro's grounds thus far were well taken. It is claimed, however, that the *concessionaires* were not permitted their day in court, were not notified of the attitude and action of the government, and that the first thing they knew of their dispossession was when a gunboat and a company of soldiers appeared on the scene to seize their property and oust them.

Venezuela claims the steps taken were legal and usual in every sense and that the *concessionaires* were informed all of the time of what was going on, but having no case they remained in the background relying upon the United States government to enforce their rights to their patented property, which Venezuela contends would not have been patented except for the existence of a contract which it believed was to be carried out by the *concessionaires* and in which they failed. In other words, Venezuela

assumes that the patents and concessions bear upon each other. The seizure of the Asphalt Trust's claim and accumulated plant was contemporaneous with a decision of the Venezuela courts fining the trust two hundred thousand dollars for failure to perform its contract, and the seizure of the plant was to satisfy this fine.

Then the Asphalt Trust made its most foolish move. There was a chance to back a General Matos in a revolution against Castro, which the trust did sled length. In fact the claim is made that it was an Asphalt Trust revolution in the main. General Matos nearly succeeded, but not entirely, and the trust naturally found itself worse off than ever, because Castro proceeded against it again in the courts and got a verdict for damages amounting to several millions. It was at this juncture that the Asphalt Trust fell back entirely upon the United States, its last resource in Venezuela gone so long as Castro lives.

Guilty of admitted sharp practices, with little doubt that it did not live up to original contracts and finally abetted a revolution, it would appear that the trust desires the United States to pull its very badly burned chestnuts out of the fire.

The fact that French and Italian citizens have alleged grievances, which may have as poor foundation in justice as the Asphalt Trust's claims, does not warrant the United States in

rushing in blindly. And it has not rushed in. There has been a serious attempt upon the part of the government to adjust matters, but it found them so badly mixed and its citizens to have been so derelict and worse, that practically no action has been taken up to the time of this writing.

President Castro undoubtedly has his faults and is very human and he and his press abuse the United States, but not more than the press of our country nags Castro. He has his point of view and seems to be more in the right than most of those who assail him.

Suppose for a moment that every dishonest trust or unwholesome combination of promoters, stock jobbers, or public thieves that are regulated in our own country could appeal to a foreign power. We would be involved all of the time, and especially in this era of careful and careless reform; there never would have been a land grant forfeited or a corporation successfully fined. And suppose private interests started a revolution. Would we arbitrate it? And suppose foreigners started a revolution. It is a question whether we would not be wilder than Castro. The peppery *presidente* has his side indeed and he has most of the people of Venezuela with him and he is not exploiting his country for personal enrichment, which would be their business to detect and resent anyhow. His is the

established government and as such, under that vague thing called "international law," is entitled to as much respect as Great Britain, except where "international law" is only for the strong and not for the weak.

The United States cannot afford to go to war with a weaker nation as quickly as it would with a stronger, and in this matter of sentiment the country has been, as a general thing, wise and just and well poised. Nor can the United States act with either dignity, profit, or fairness as a collecting agency for every adventurous citizen who may appeal to it after exhausting all of his means of intrigue, lawlessness, and general devilry. In other words, the country with its fine patriotism, exalted ideas of justice and fair play, and great courage and strength, must apply the whole with a proper regard for common sense.

Presidente Castro is a strong man. He possesses courage and constructiveness, is a natural leader, and the Venezuelans believe he is a patriot who desires to stand between them and the wanton exploitation of their country by foreign adventurers and investors. Patriots of highest degree have sprung before from the loins of Caracas, for the brave and sacrificing Bolivar was born in that city.

It is estimated that the *llanos*, occupying the central part of Venezuela, comprise an area of

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300,000 square miles, much of which is valuable for stock-raising and certain kinds of farming. The llanos are divided into the *bajo* and *alto*, or low and high. There are great sandy tracts and pretentious dunes in some localities of the llanos, but generally these plains are very well watered.

Lake Maracaibo is 102 miles long, has a shore line of 370 miles, an area of 8000 square miles, and is partly fresh and partly salt. The lake is 500 feet deep but has only ten feet of water over the bar at the outlet, where there is a tide of three feet. Lake Maracaibo could easily be made to serve large ships by improvements at this bar.

When Valencia was founded in 1555, it was on the shore of Lake Tacarigua, but now its cathedral is six miles inland, so greatly has the lake receded. Lake Tacarigua still has an area of sixty-six square miles and an extreme depth of 300 feet, is 1410 feet above the sea, and its waters are brackish.

The flora of South America ranges from the rarest orchids and tropical growths to the most diminutive Alpine plants in the higher ranges of the Andes. Where the mountain elevations in the tropics make for temperate conditions, one may see a riot of familiar blooms, including convolvulus, heliotrope, asters, jasmine, dandelions, vetches, daisies, gentians, and at least six

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varieties of anemones. There are many blossoming trees, gorgeous and royal in coloring and effect. Foliage plants of exquisite tinting and design are numerous, including poinsettia and many different begonias.

CHAPTER XX

THE GUIANAS

Royalty in South America Confined to the Guianas — Great Contrast to the Royal Domain in North America — Georgetown, British Guiana — Granite Sea Wall — Paramaribo, Dutch Guiana — Cayenne, French Guiana — Natural Canals.

THE foothold of royalty in South America is confined to the British and Dutch Guianas, an area of 150,000 square miles which, compared with the royal realm of Canada in North America, not to mention British Honduras, makes a fine showing for the spirit of the South Americans, who really are the most democratic peoples in the world.

British Guiana has an area of 104,000 square miles and a population of nearly 300,000. It is not a very interesting colony and has not been particularly profitable to Great Britain.

Georgetown, also called Demerara, is the capital and leading city, with a population of 58,500. It lies on the Atlantic Ocean at the mouth of the Demerara River, 2209 miles from New York and 1869 miles from Havana. The

sea wall of granite, two miles long and twenty-five feet wide at the top, which protects Georgetown from the spring tides that rise above it, is a feature of the place and a great promenade. The city is so low that sluices and steam pumps are necessary to care for the water during heavy rains. A system of surface drainage canals quite cuts up the city. Across the Berbice River from Rosignal is New Amsterdam, with ferry service. Rosignal is reached by rail from Georgetown. Another railroad runs through Vreed-en-Hoop to Greenwich Park. Very interesting steamer trips may be made on regular boats up the Demerara, Essequibo, and Berbice Rivers. There is direct ocean steamer service from New York to Georgetown.

Dutch Guiana has an area of 46,060 square miles and a population of 76,798. The natural water system of the colony made it possible for the thrifty, canal-loving Dutch to dig connections between streams that were close together, and thus traverse great regions by boat. The Sommeldyk Canal connects the Saramacca and Surinam Rivers and a natural canal completes the connection to the Coppename River, and in such manner other streams are joined.

Paramaribo or Surinam, capital of Dutch Guiana, is located on the Surinam River, twelve miles above its mouth. It has a population of thirty-two thousand. A curious coquina

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formation supplies a good foundation for the city. Fort New Amsterdam is supposed to defend the city. Vessels of only average draught can ascend the Surinam. Paramaribo is scattered along the river for two miles and extends back from the stream a half-mile. It was founded by the French in 1640. The distance to Georgetown is two hundred and seventeen miles. The United States has the bulk of the trade with Dutch Guiana.

French Guiana has an area of 30,500 square miles and a population of 44,000. Much of the country is under water and the seashores are marshy and malarial. The internal river system is much the same as in Dutch Guiana, of which it is in instances a part, and all so low that it does not make much difference which way the water runs as it flows back and forth through the many natural canals that connect the rivers.

Cayenne, population 13,000, situated on the island of Cayenne, in the mouth of the Cayenne River, is the capital of French Guiana. Cayenne boasts of its cosmopolitan complexion, with its shops kept by Annamese and Chinese and its creole servants and its population from all corners of the earth. Cayenne is 260 miles from Paramaribo, 477 miles from Georgetown, and 2443 miles from New York. It has been the permanent capital since 1877. There are rich placer mines which produced \$2,893,249 in 1902.

The Guianas export essence of rosewood, balata gum, cacao, fine feathers, and fine woods, phosphate rock, gold, sugar, rum, coffee, diamonds, and charcoal.

French Guiana in trade is very loyal to France, but treats the United States next best.

CHAPTER XXI

BOLIVAR

Yoke of Spain Thrown Off—The Bolivarian Wars—Bolívar freed Venezuela, Colombia, Ecuador, Bolivia, and Peru—A World's Hero—Biographical Sketch of Bolívar—Trouble with Miranda—Effect of the Earthquake of 1812 upon the People—Holstein's Inconsistent Criticisms—Victory and Defeat—Ribos beats Monteverde—Marino—Boves' Infernal Legion—Bolívar's Fearful Retaliation—A Black Year—Cruelty a Disease of the Times—Brion and Bolívar—Accessions at Angostura—Tricked by Morillo—Memorable March over the Andes—Victory of Boyacá—The Story of Doña Policapía—Victory of Carabobo—Final Fall of Caracas—On to Peru—Battle of the Plains of Junín—Decisive Victory at Ayacucho and Peru Free—The Brave Sucre—Bolívar's Desire to free Cuba thwarted—Bolívar dies an Exile—General San Martín's Great March over the Andes—Lord Cochrane, Admiral—General Social Conditions in South America—Greater Union of Government and Purpose proposed.

SIMON BOLIVAR, styled "Libertador," throughout the northern republics of South America, as we call George Washington the "Father of His Country," is regarded by his

admirers and by many who pretend to exercise impartial judgment, as having been greater than Alexander, Hannibal, or Cæsar. It was Bolivar's leadership, genius, patriotism, courage, and persistence that threw the Spanish yoke off of Venezuela, Colombia, Ecuador, Peru, and Bolivia.

Hannibal and Cæsar and Alexander had at their command great wealth and population, and their campaigns were in older countries where every road was known and improved.

Bolivar fought in the new world with a handful of impoverished patriots, and in lands surcharged with poisons, both vegetable and animal; where trackless and almost impenetrable swamps were imposed as barriers; where great water-covered areas suddenly rose into Titanic mountains whose tropical passes were so high as to be filled with ice and snow, and where the whole face of nature frowned against expeditionary operations.

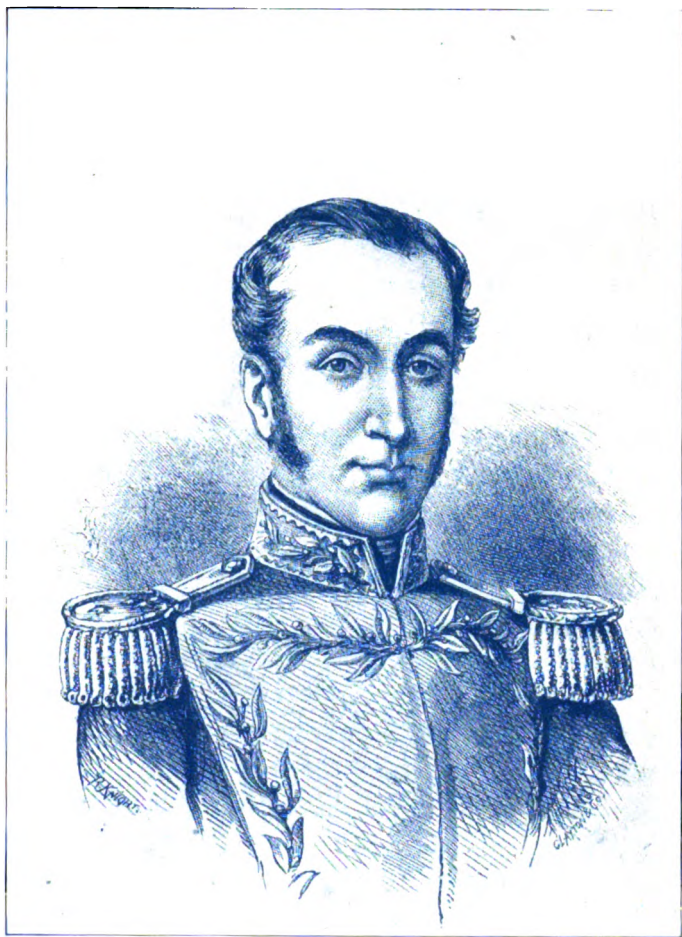
One contemplating the career of Bolivar finds his sympathetic thoughts turning to Washington at Valley Forge and other comparable situations. But it must be admitted that even the brave Washington's campaigns, bristling with willing sacrifice and ready self-denial, were carried on amidst more reasonable surroundings, against a more generous enemy, and covered a much less area.

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Comparing Bolivar with Napoleon one sees the destruction of the latter and France impoverished, and then witnesses the new nations full of hope the former made way for. Some military critics assert that Bolivar equalled Charles XII. in boldness and Ulysses S. Grant or Frederick II. in persistency and strategy, and it is true that his marches were longer than those famous feats of Timur-Leng and Genghis Khan. His campaigns continued from 1810 to 1824, fourteen years, in which he led his men in desperate battles and marched by their side through miasmatic swamps and over high mountains, now hiding in the forests and then dashing into the open; often winning and often defeated, but never once losing courage or spirit.

Some will accept the fact that he was never even wounded as proof that the Great Universal Cause still protects the agents of His will as in the days when Joshua was permitted to stay the course of the sun upon Gibeon and the moon in the valley of Ajalon.

Like Washington, Bolivar was born of a family of wealth and refinement. Much more than Washington did he give up all for his country. His acts and his example are not taught and emulated in South America as they should be, or those countries where selfish contention and strife are forever present would give heed and mend their ways.



SIMON BOLIVAR

Simon Bolivar was born at Caracas in 1783. His father died when the son was still of tender years, leaving him an estate of vast wealth, comprising productive lands, town houses, country villas, and slaves numbering into the thousands. His mother, Señora Palacio, gave the most careful attention to the education of her son, always engaging competent instructors and often securing teachers of reputation. At fifteen Bolivar was sent upon a journey to Spain in order that his mind might have the benefit of travel. On his way he touched at Vera Cruz, visited the City of Mexico, and made quite a stay at Havana, proceeding directly from Cuba to Madrid. At the Spanish capital his wealth gave Bolivar access to the court and his manners were soon those of a polished cavalier. From Madrid he travelled over Europe, became studious and observing, attended lectures and discussions in Paris, which was but then recovering from the tragic effects of the French Revolution, and was captivated by the career of the bold and successful young conqueror, Napoleon, who was nearing the apex of his fame as a coryphæus. At Rome he is said to have formed his first tangible ideas of freeing his country. He noted the wealth and progress and vigor and comparative freedom of Europe, in comparison with which his people were in bondage and poor and ridden to the death with oppression.

Returning to Madrid, at eighteen Bolivar fell in love with Señorita Teresa del Toro, the very beautiful-sixteen-year-old daughter of Don Bernardo del Toro. They were soon happily married and Bolivar, temporarily forgetting in his bliss his high resolves of patriotism, took his bride home to Caracas and assumed charge of his rich estates. But very soon his happiness was turned into that gloom where genius often buds. His wife died and he was left childless and in deepest melancholy, wherefrom he sprang with fierce desire to uplift his people. There was just enough Indian blood in his veins to cause him to be classified with them, in a sense, as a despised creole, by some of the haughty Spanish colonial officials, and this was fortunate in that it gave him deeper sympathy and won for him the fuller confidence of his fellows.

Graceful, eyes bright and direct, well groomed, versatile, a ready speaker and writer, education broadened by observation in Europe, stately and handsome, yet winsome and approachable, he was the ideal leader. One of his first acts was to show publicly the honesty of his sincere desires by emancipating all of his large number of slaves.

Spain had no interest in her South American colonies, or those elsewhere, beyond enriching herself to the fullest by the product of mine and soil. Free or lawful trade between the colonies

was prohibited and no foreign trade whatever except with Spain was permitted. Monopolies were granted to huge organizations like the Philippine Company, which had power to make war upon and absolutely control the colonies, forcing them to sell to the oppressive company at prices fixed by that company and bearing no relation at all to value. Coast guards were numerous and watchful and were given a premium for capturing any one attempting to evade the monopoly. These guards were brutal, merciless, and pitilessly cruel. No manufacturing was permitted. Anything that suggested education or progress was forbidden and every independent commercial action was "lawless." All had to be licensed and there was no generosity of license.

Merida was forbidden to found a university, and instruction was obtained only by those wealthy and powerful enough to employ private tutors, and even this had oftentimes to be done in strict privacy. Where political oppression ended Church oppression began, and it is impossible for a liberal mind of this epoch to conceive the deplorable conditions into which the South American colonies had been plunged by officials and priests. It was death to read an English history or to even speak of an heretical book. Frequently the masters from Spain were coarse and inferior, but through intrigue at the Madrid court had come to rule over a superior people and wound their pride.

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The Napoleonic wars, in which Spain was involved, compelled a neglect of the colonies whence troops and ships were called to the home country for defence. This made it possible for the colonists to rise and organize without every act being arrested in its incipency, and they took advantage of the occasion, despite the direful threat of Spain that their lands would be devastated and that every soul in rebellion would be put to the sword. The younger element of the rich creoles, including John and Simon Bolivar, Ribos, Montillas, Toro, and others like them, whose blood was seething with desire for freedom, formed a secret order whose one object was rebellion by force.

April 19, 1810, a feast day, was chosen for the uprising. The soldiery had been won over. When Emparan, Captain General, came out from attending his colonial council, he was surrounded by conspirators led by Salias. Emparan surrendered at once, abdicated his position, and was exported. Caracas was free for the moment. The new junta made La Guaira a free port and declared Venezuela open to the trade of the world; excessive capitation and other oppressive taxes were removed; the inquisition was abolished; equality was proclaimed, and the moments appeared to teem with auspicious opportunities for the infant republic.

As soon as the news spread, the movement

for freedom became spontaneous all over South America. Granada (Colombia), Buenos Ayres (the Argentine), Chile, and all Spanish South America threw off the yoke of the oppressor. Only Brazil, under more liberal Portuguese dominion, did not join the chorus for liberty at this time.

Bolivar went to England to seek assistance in maintaining the freedom of the new nation. He not only failed there, but also in France; and elsewhere in Europe he found some sympathy but no aid such as had been given to the North American colonies in their revolution.

With an ardor cruelly directed and worthy of better things Spain flung all her furies at the colonies, even sending men and moneys to reinforce her armies and fleets in South America at the very time the French invasion was hammering at her home portals. Spain blockaded Venezuela and held the ports of Coro and Maracaibo as bases for land operations. The revolutionists were not dismayed. Miranda, who had fought with Washington and with Dumouriez and who had once headed a previous attempt to win freedom at home, returned from Europe with Bolivar and became commander-in-chief. Venezuela officially declared its independence on July 5, 1811, and Chile and Buenos Ayres soon followed its example. Indians and Llaneros quite generally sided with the new republics.

During all the time in which these important events were occurring the priests had both openly and secretly opposed the people. Dimly they seemed to detect in progress and liberty the dethronement of their practices, other than the inquisition, which have made this and other church histories unpleasant reading. For a time they did not avail.

Women gave their jewels to the cause of liberty, sang songs and said prayers, and the peons of every color were ebulliently happy in their new freedom. But the priests frowned and predicted that the vengeance of God would overwhelm them. As if to justify this and enthrone despair and fear and superstition, the terrible earthquake of 1812 occurred in Caracas. The fine city, of fifty thousand people and handsome edifices, was razed, people were crushed to death at home, in churches, and in business buildings. One patriot company of eight hundred men was almost entirely destroyed. There were twelve thousand dead and the city was a waste and the people were in a frenzy of grief and fear. Then came the priests wailing and proclaiming that it was the punishment of God for the guilt of revolution. This operated upon patriotism as the earthquake had upon the city, as a disintegrating blast. The revolutionary leaders were looked upon as the authors of the trouble and they lost their influence; the great majority of

the people fell upon their faces and craved forgiveness for defying the king and the divine teachings of the Church. The republic fell.

Washington never had to contend against such a condition of things. During all of his sufferings and sacrifices and attacks of foes, open and secret, and the machinations of traitors, the majority of the people loved him and trusted him. They had a higher intelligence and a truer temper.

The Spanish commander, Monteverde, proceeded from Coro through the interior of Venezuela killing and destroying everything in his pathway. If Spain at this juncture had received her repentant colonists back into her hands and had treated them half fairly and kindly, the desire for liberty would have remained an impotent sentiment for many years. But that was not the policy of Spain, which has never seemed to acquire colonizing sense up to the present time.

Bolivar lost his command at Porto Cabello. Miranda gave battle to Monteverde and was defeated. The Spanish army marched into Caracas. Bolivar, in revenge, it is thought, for his dismissal at Porto Cabello, aided the Spaniards in arresting Miranda and the brave old patriot general died a prisoner at Cadiz. Historians generally consider that Bolivar's treatment of Miranda is a blot upon his otherwise fair escutcheon, but nearly all agree that Bolivar

took the steps in order to protect himself against the intrigues he was convinced originated with Miranda, who had, perhaps, become jealous of the rising young leader.

Murder, riot, and great disorder followed the recrudescence of Spanish rule; there were heavier taxes to pay the cost of the rebellion, and gaunt oppression, more merciless than ever, existed in Venezuela. Bolivar was offered amnesty and high place by the Spaniards, with permission to enjoy the usufruct of his estates, but he proved the fidelity of his patriotism by refusing to be reconciled. His activities and plans for freedom were suspected and he fled from his plantation on the Rio Guaira. In foreign lands he worked on and never lost hope, striving with Cromwellian persistence to start the nucleus of a movement for regaining the freedom of his country. So much alone was he in his plans and desires that it is quite possible, had anything happened to him, that Spain would have remained in control in South America as long as her flag floated in Cuba or longer.

Holstein was harsh and unfair in accusing Bolivar of unusual vanity, personal ambition, boastfulness, licentiousness, and cruelty, paying small compensation to his memory for the assault by admitting that he fought with ardor and success for the cause that always fires men's souls and stimulates their endeavors — freedom.

Holstein ridicules the South American comparison of Bolivar with Cæsar, Titus, and Marcus Aurelius, but those writers friendly to Bolivar claim that he was superior to all of these old Latium heroes, in that he fought to liberate and not to enslave; to construct, not to destroy; that his courage waxed highest when difficulties were greatest, and that repeated trials only refined his persistent earnestness.

It was in 1813 that Bolivar and his cousin Ribos went to Carthagena, a free town in the then New Granada. The army of New Granada under Castillo joined him, but deserted to a man before a blow was struck. Undismayed, Bolivar, with a few hundred exiles, darted into the midst of the Spaniards. From Carthagena to San Cristobal his little army swept all before it. Proclamations were issued calling upon the people to rise and they did so, joining Bolivar in greater numbers as he advanced by quick marches from one populated district to another. Very soon he had three thousand men fairly well armed and ready to fight and die. Monteverde marched against this army, but was signally defeated by Ribos, who was in command of the division of the patriots that the Spaniards attacked August 6, 1813.

Bolivar marched into Caracas and was received with wildest demonstrations of joy. His pathway was strewn with flowers and the most

beautiful children clad in white, their great brown eyes shining with devotion, welcomed him. The persecuted in prisons were unchained and left their tainted dungeons to cry *viva* to the liberator. As dictator for the time being, Bolivar was firm, but just and tolerant. Nor Spaniard nor priest was punished if he subscribed to the new order of things.

Marino, a student, had headed meantime a successful uprising in eastern Venezuela and declared himself dictator of Cumana. There was no friction whatever between Bolivar and Marino. They had a common cause in helping their fellow patriots and acted in harmony.

Boves, a Castilian convict, noted for bravery as well as fierce cruelty, came from Spain at the head of a new royal army, with the promise of full pardon and a place at court in addition to great wealth if he would subjugate the rebels. He organized the "Infernal Legion" among native outlaws, and their rage for rapine and slaughter has never been surpassed by guerilla or buccaneer. Bolivar threatened retaliation, but Boves did not halt, but dared him to perform his threats. It was under these awful conditions that Bolivar executed eight hundred Spanish merchants and soldiers he held as prisoners. Boves defeated Bolivar and Marino at every turn, and entering Caracas, the gutters ran with the blood of the patriots. The inquisition was reëstablished and priests returned to power.

Ferdinand VII. sent an army of ten thousand Spanish veterans and announced that not one rebellious patriot would be left alive in South America. Morillo was in command. He garrisoned all of the leading towns of Venezuela, subdued New Granada, executed prominent creoles right and left without trial, and sent word to the king that he had removed every trace of rebellion. Caracas became the heart of Spanish rule. Peru, Chile, Buenos Ayres, and all Spanish South America was subdued.

The year 1816 was the blackest in the history of those colonies. Whole families were murdered, babes and children did not escape, terror reigned at noonday and midnight alike, and when Bolivar, who had fled to the mountains, returned he found his pathway blocked with dead bodies left purposely in the way. The children of the inquisition were masters of murder and cruelty. Spanish barbarism in South America made the acts of Alva in the Netherlands seem ordinary.

So saturated was Spain during her worst era with licentiousness and brutality and a mania to kill and torture, that it amounted to a form of insanity and impressed everything, — the church, state, public and private morals, minds of young and old, and the very literature. Lope de Vega could not write without making heroes of seducers, robbers, and assassins. Calderon, the

poet of the inquisition, arouses fierce intolerance of the heretic, and even Cervantes, with all of his great genius, had no mercy for him whom the Church pronounced a heretic. Cruelty was a disease of the age.

Boliver was in hopeless exile, his enemies thought. No wealth, no influence, no credit, only a record of brave defeat, hunted, a reward offered for his head, he was regarded as impotent and powerless. But the resolve of a patriot's mind and the springs of a patriot's heart are only quenched by death.

At Curaçoa Bolivar enlisted the aid of a stout-hearted Dutch-Frenchman of wealth, named Brion, who fitted out a small fleet, with which the exile sailed up the Orinoco to Angostura and from that direction attacked Spanish territory. It was the heart of the tropics, — chattering monkeys, screaming parrots, crimson macaws, through the tangled, muscated forests; poisonous vines and plants made the jungle a human snare; deadly snakes with beady eyes and clammy folds, suspended from overhanging limbs, awaited their prey; the man-eating cayman infested bayou and stream, than all of which the savage cruelty of the Spaniards was still more terrible.

At Angostura large numbers of brave Llaneros, as wild as Bedouins and much the same from their life on the great plains, joined Bolivar.

Several hundred foreign soldiers, thrown out of duty by European peace, many of them English, and all thirsting for adventure, glory, and profit, came to the patriot's colors. Bolivar invaded and Morillo pretended to retire. The patriot did not divine the ruse and incautiously pursued the tricky Spaniard. Morillo turned upon him at an advantageous moment and Bolivar sustained a severe defeat and fled across the Orinoco. His followers were depressed and discouraged and all hope seemed gone.

Most fertile in despair, Bolivar led his serried army across the Andes into New Granada and struck the Spaniards at the most unlooked-for spot, the centre of their power. The march across the Andes was made in Winter, first through swamp and morass where the stagnant waters bred every noisome thing, and then over the snow-clad and ice-bound passes of the great mountains. Napoleon in his craziest mood could not have essayed a madder feat. It was do or die. Day after day the patriots marched through water to their loins and found no dry spot whereon to sleep at night. Amidst greater dangers the chiefest annoyance was a small fish with long jaws and sharp barbed teeth that fastened in scores to the uncovered legs of the soldiers. If ordinary war is hell, a new stigma needs invention for the sufferings of this expedition. The foreign followers died like flies and

the natives were ready to give up, but Bolivar cheered them on as did Clark his men upon that marvellous winter march to attack Vincennes. Just as soon as civilization was reached the ragged, tired army was joined by refugees, men, women, and children, anxious to return home if afforded a shadow of protection. Bolivar swam swollen torrents, dragging at his horse's tail women with babes and children and old men. He was kind to all. Often at night the army sank down as if to die, incapable through exhaustion of taking another step. Morning would bring new life and the brave leader would smile and cheer, and the men were restored for another terrible day.

All indulged the hope that they would surprise the Spaniards, but they were disappointed. A strong Spanish army attacked them while they were sick and worn, hungry and feeble, and half-armed, but delirium seemed to seize them and they charged the Spaniards with a wildness that could not be withstood. A great victory was won. New Granada arose. Bolivar pursued the enemy vigorously in spite of his worn army. Barreira, commander of the Spaniards, consented to a decisive battle at Boyaca with confidence. Bolivar's men made another desperate charge and the sleek Spanish soldiery fled. Santander, during the absence of Bolivar, shot Barreira and his officers, all of whom had been

captured, and executed many more in reparation of the cruelty of the Spaniards. New Granada had seen the flower of her manhood die and demanded harsh retributory justice.

Stories of the acts of those times, appealing, piteous, stirring, and depressing, are told without number. The part played by Doña Policapia and her fate are historically true, and illustrate the bravery of some women and the heartlessness of some men. As Bolivar approached Bogota, where Zamano was Spanish governor, many attempts were made by patriots to assist him. Doña Policapia was one of Bogota's most beautiful and accomplished daughters. She was wealthy, refined, musical, and charming. Young Spanish officers gathered around her like moths. Nor did they dream that one so delicately moulded and so angelic could have any very human purpose in life. She asked them questions from time to time about their plans, expressing the hope that nothing would take them away and plunge Bogota in gloom. At other times in reply to veiled inquiry they would tell her the number of soldiers in their regiments. In one way and another the beautiful girl obtained most valuable information from the enemy. This she forwarded to Bolivar. One day a messenger was captured. Begging for his life he betrayed his mistress. Doña Policapia was arrested and her promised husband, to whom

she was soon to be married, was also thrown into prison. Zamano, who wore the garb of a Capuchin in his zeal, sent a priest to threaten the girl with everlasting punishment unless she divulged the names of her associates. But she defied the threats of the Church and all the other tortures applied. Zamano had erected a busy gallows in the principal square of Bogota where all could see, and he had a bench placed in the Alameda whereon victims were bound when they were to be shot. He had an eye to the terrible emphasis of contrast. Where the people had promenaded in peace, listening to the strains of music, he took them to bid farewell to earth. No one who has not seen the Latin in his public garden can comprehend his light mirth and effervescent happiness, nor can he exactly feel the horror of turning such a place into one of public execution. A guillotine in a picnic ground would be the same.

Doña Policapia was offered her own life and freedom and wealth and the life of her lover too, if she would confess. But she spurned all. Bound together the lovers were chained to the death bench in the Alameda. Once the young man seemed about to give in and tell all he knew. The brave girl turned upon him almost fiercely and begged him to have courage and die worthy of her if he had ever loved her. Zamano gave the order to fire, and as the flames burst

from the muzzles of the rifles the Doña threw aside her mantle, disclosing upon her undergarments the legend *VIVE LA PATRIA*, wrought in gold. Instant death closed the scene.

Bolivar was advancing rapidly upon Bogota. His victory at Boyaca had raised him in public estimation again from a wanderer to a hero. During the march through swamps and over the Andes, and after the defeat by Morillo, his own men, as well as the foreign allies, abused him with no limit except that of vocabulary, and would have deserted him if there had been anywhere to go. The tide had turned. Bogota received him with frantic joy. The Spaniards fled in every direction. But all of the time Bolivar's objective was Caracas, his deeply loved home. Eyes of lack-lustre, bent frame, face pale and emaciated, he was prematurely old through all his sacrifices, when in repose; but when the march to Caracas with a fine army was in mind, he was as a being possessed with the fire of divine inspiration. The entire native populace seemed to arise and flock to his standard.

In June, 1821, Bolivar, commanding in person, hemmed in and attacked the Spanish army at Carabobo and won a splendid victory. Caracas received the patriot army befittingly and with deep happiness, tinged with the sorrows and catastrophes of the past, making the occasion solemn and earnest. War continued. Porto

Cabello fell in November, 1823, marking the culmination of Spanish power in all that region.

Bolivar joined Venezuela and Granada and called the union the Republic of Colombia. Peru looked toward him and trusted him with affection. These conditions seemed to warrant his hope that he might organize a great republic composed of all the countries of South America and Central America, from Mexico to Cape Horn.

War continued in Peru. The Spanish army was generally victorious. Disheartened, the Peruvians sought help from Bolivar. He quickly organized an expedition, but was kept for months by the Spaniards in a small coast town where he had a low fever. There was no chance to move. His foes derided him, and his mercurial countrymen at home in Caracas relieved him as commander-in-chief. They had no sympathy, apparently, for him, despite his weak state. Bolivar felt the distrust and opposition keenly. He offered to give up all place and emoluments in Colombia, but would not give over trying to aid Peru, to which end he constantly prepared his army as rapidly as his slowly returning health would permit.

Meanwhile Peru seemed lost. Patriot after patriot in high place made terms as best they could with Ferdinand, and the Spaniards were successful, jubilant, and confident.

When the healing winds of Autumn and Winter came down from the snowy Andean heights Bolivar and his men waxed well and strong and eager for the fray. Bolivar sprang from his lair like a restored lion. Sucre was with him. The armies met on the plain of Junin. The Andes towered over copse and slough. Reedy patches intervened. Bolivar and Sucre had seven thousand men; the Spanish army numbered nine thousand. The weird wildness of the patriots had a psychological influence upon the Spaniards. It was a great battle for the place and time. Soaring high overhead on certain wing the condor awaited his feast of the slain. There never was a stranger setting for a battle. Finding that they could not drive the patriot army, the Spaniards, who fought well at first, seemed to become obsessed with panic. One company gave way and then another, until the retreat became a rout.

Bolivar joined the Peruvians in the work of organizing a republic, seeking to further his dream of South American federation. Sucre pursued the enemy. A decisive and final battle was fought at Ayacucho, December 9, 1824. Again the army of the king was greater in numbers and had seen more service, but its heart was not wholly in the conflict against the men who were fighting for their homes and freedom. Sucre drove the Spaniards in confusion and

dismay from the grassy pampa that formed the battle field. Ayacucho was won and with it occurred the fall of Spain in South America.

Bolivar was hailed as a hero all over the earth where men cherish hope and hate despots. La Fayette wrote to him in terms of most cordial felicitation, and everywhere he was compared to Washington. The Republic of Bolivia was formed to perpetuate his name. He returned to Caracas covered with glory. No spoils of war were his; no broad acres wrested from Spain; none of the riches of the mines of Potosi he might have seized upon like another Cæsar or Napoleon.

Bolivar had one further ambition; to free Cuba before he died. England, France, and the United States intervened and prevented him from carrying out his high resolve in this connection.

The new republics did not make good use of their freedom at once, and some of them never have done so. Venezuela soon separated from Colombia and there was war with Peru. Jealousy, selfishness, petty pride, and ambition all seemed to submerge true patriotism. Bolivar's enemies were in the saddle and strangely enough he was exiled from the land he had saved. This broke his heart and caused his death at Cartagena, December 17, 1830. From his death-bed the hero dictated a last message to his

people urging peace, progress, and union. He said:

“For my enemies I have only forgiveness. If my death shall contribute to the cessation of factional strife and the consolidation of the Union I will go tranquilly to my grave.”

One of the most interesting and remarkable expeditions in the history of warfare was the march of General José de San Martín from Buenos Ayres over the Andes to the relief of Chile and Peru in 1817, during the wars for independence. San Martín was born on the banks of the Uruguay River, at Yapeyu, in 1778. Sent to Spain at eight he was educated at the Royal College, joined the army and saw service against the Portuguese, Moors, English, and French and learned a varied style of warfare. Returning to Buenos Ayres he organized a fine regiment of cavalry and fought for his country in its efforts for release from the thralldom of Spain.

When Buenos Ayres won freedom San Martín, a born fighter, determined to organize an army and cross the Andes to the aid of his west coast compatriots. There were plenty of jealousies among his fellows and he had to employ a high hand in clearing a pathway for his operations. In addition to this he spread conflicting and confusing rumors about the “Irish Pirate,” as the Spaniards termed William Brown, and about

his threatened attacks at divers places where he hoped to get the enemy to concentrate and thus be more easily avoided. His ruse succeeded.

San Martin gathered an army of five thousand infantry and sixteen hundred cavalry at Mendoza. To accommodate this he had secured 7359 riding mules for the infantry; 1600 horses for the cavalry, and 1922 pack mules. The plan was to cross the Andes at six passes debouching at Los Andes, Los Patos, Copiapo, Los Piquenes, by Coquimbo, and by the Planchon. The main army, however, followed the Antiguo Camino, via the Uspallata, which is the route of the present Transandine Railway.

The men never murmured. They were well fed on dried beef seasoned with red peppers, coarse but wholesome cheese, hardtack, roast corn, and rations of *aguardiente* and garlic. The latter was to help the plainsmen withstand the *sorroche*, or mountain sickness.

The Spaniards were surprised at every pass. A decisive battle was fought at Chacabuco. San Martin was chosen dictator, but declined in behalf of O'Higgins. He also declined a gift of \$10,000 offered him by Santiago, requesting that the money be used to found a library.

Another victorious battle at Maipo, and Chile was free. Then San Martin, O'Higgins, and Lord Cochrane gave their attention to the liberation of Peru. San Martin and Lord Cochrane

did not get along well together. They had no end of trouble and never forgave each other during life. San Martin was a great general. He died at Boulogne, France, in 1850, having lived there and at Brussels, since 1830.

Alison says that after Nelson, Thomas, Lord Cochrane, was the greatest admiral of his time and even surpassed Nelson in originality, resource, and invention. Chile holds him in grateful remembrance.

In the South American republics there are many pleasant conditions. Taxes are light, public expenditures are not great in comparison with the United States or Europe; armies and navies are small and will do well when a higher type of patriotism is evolved. Chile leads in ethical growth. There is more spirit of country first and self afterwards there than in any of the other republics. A free press has developed to a wholesome degree; schools are partially free, and the next great step should be a free church and absolute separation of church and state for the benefit of both institutions. There is much primitiveness yet all over South America. Huge areas have their wild tribes still unknown, and leafy huts on tropical rivers contain a form of human life little above the animal. There is plenty of the raw material of civilization and a good deal of the spirit which makes for real and

permanent uplift. Chile, Argentina, and Brazil are the hopes of South America. Uruguay, Paraguay, Bolivia, and Peru are potential according to their strength. Uruguay and Paraguay should cast their lot with the east coast nations and Bolivia and Peru should join Chile for common good. Then the three large and responsible nations should exercise a joint guardianship, even amounting to suzerainty, over Ecuador, Colombia, and Venezuela, the three least responsible republics, guaranteeing stability of government and safety of property. South American countries have their high duties and responsibilities, and in time they will come to realize them, live up to them, and thus relieve the strain upon the Monroe Doctrine.

APPENDIX

SPANISH PROVERBS

AN open window to the character and mental attitude of a people are their proverbs, which are as signboards to their literature and morals, out of which have grown their habits of thought and action. One may find out more in the songs and folklore and common sayings of a nation than from any other source. The Spanish are very like all other Caucasians, except in temperament perhaps. Environment and intermixture has made a new Spanish type in South America, just as would have been accomplished in Spain if the Moors and the Jews had not been driven forth. The following proverbs are basic and numerous enough to reflect the dominant Spanish disposition:

A buen entendedor breve hablador: A good hearer needs few words.

A cada puerco su San Martin: Every hog has his Martinmas.

A carne de lobo diente de perro: For wolf's flesh a dog's tooth.

A casa de tu hermano, no iras cada serano: Don't go even to your brother's house every evening.

A caballo dado no le miren el diente: Don't look a gift horse in the mouth.

A caballo nuevo, caballero viejo: A new horse needs an old rider.

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A dineros pagados, brazos quebrados: When the money is paid the arms are broken.

Adonde ira el buey que no are: Where can the ox escape the plough?

A gran salto gran quebranto: A big leap gives a great shake.

A hambre no hay mal pan: Hunger knows no bad bread.

Al gato por ser ladron, no le echas de tu mansion: Don't turn your cat away for being a thief.

Al gran arroyo pasar postrero: Be the last in passing a big stream.

Al villano dado el dedo, tomara la mano: Give a rogue your little finger and he will take your whole hand.

A mal pagador nunca le faltan excusas: A bad debtor never lacks excuses.

Amores, dolores y dineros, no puedan estar secretos: Love, grief, and money cannot be concealed.

Anda cada oveja con su pareja: Each sheep goes with his fellow.

Antes que te cases, mira lo que haces: Look well before you marry.

A padre guardador, hijo gastador: Miserly father, spendthrift son.

A puerto cerrada el diablo se vuelve: The devil retreats from the closed door.

Aquel va mas sano, que va por lo llano: He travels most safely who goes on the high road.

A quien dan no escoge: Beggars must not be choosers.

A quien no sobra, no debe cria perro: He who has nothing to spare should not keep a dog.

Asno de muchos, lobos le comen: Wolves devour the ass that has many owners.

Aunque sea vestida de seda mona, mona queda: A monkey clad in silk is still a monkey.

Ausencia es la enemiga del amor: Out of sight, out of mind.

Ayer vaquero hoy caballero: Yesterday a herdsman; to-day a gentleman.

Bien canta Marta despues de harta: A good supper deserves a good song.

Buey viejo sulco derecho: An old ox makes a straight furrow.

Burlas con el asno, y daráos en la barba, con el rabo: Jest with an ass and he will switch your face with his tail.

Cada cual siente el fria como anda cubierto: He who is thinly clad feels the cold most.

Cada gallo canta en su mulador: Every cock crows upon his own dunghill.

Cada uno estiende la pierna como tiene la cubierta: Let every one stretch his legs according to the length of his coverlid.

Camino a Roma sin mula coja, ni bolsa floja: For the journey to Rome take neither a lame mule nor a light purse.

Canta la rana y no tiene pelo ni lana: The frog sings though it has neither hair nor wool.

Como canta el abao responde el monacillo: As the abbot chants the monk responds.

Como costal de carbonero, malo de fuera peor de dentro: Like a coal-carrier's sack, — bad outside and worse within.

Con dinero no te conoceras, sin dinero no te conoceran: With money you will not know yourself; without it others will not know you.

Contra gustos no hay disputa: There is no accounting for taste.

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Cria cuervos y te sacaran los ojos: Breed crows and they will pick your eyes out.

De dineros y bondad, siempre quita la mitad: About money and goodness do not believe half.

De hombre que no habla y de perro que no ladra: Beware of talkless men and barkless dogs.

Del viejo el consejo: Go to the aged for good advice.

De noche todos los gatos son pardos: At night all cats are gray.

De tales bodas tales tortas: As is the wedding, so is the cake.

Adonde hondo el rio hace menos ruido: The river runs smoothest where deepest.

El hablar mucho y el mentir son parientes: Loquaciousness and lying are near relations.

El huesped y el pece á tres dias hiede: A guest and a fish stink on the third day.

El lobo pierde los dientes pero no los mientes: The wolf loses his teeth but not his inclination.

El mal entra á brazados y sale á pulgados: Misfortune comes by the yard and goes by the inch.

El mal que no se cura es la locura: There is no cure for a fool.

El puerco mas flaco come la mejor bellota: The leanest pig eats the fattest acorns.

El mejor lance de los dados es no jugarlos: The best throw at dice is not to play.

El que es enemigo de la novia no dice bien de la boda: The enemy of the bride does not speak well of the wedding.

El que tiene tejados de vidrio, no tire piedras á los de su vecino: Those who live in glass houses should not throw stones.

El queso pesado y el pan liviano: Cheese should be heavy and bread light.

En casa del Moro no hables algaravia: In the house of a Moor, do not speak Arabic.

En casa llena luego se guisa la cena: In a well kept house, supper is soon cooked.

En el rio adonde no hay peces, es por demas echar-redes: It is useless to fish in a river that has no fish.

En las tardanzas hay peligro: In delay there is danger.

En ruin ganado no hay que escoger: No choice can be made in a bad herd.

Entiende primero y habla despues: First understand, then speak.

Entre hermanos no metas tus manos: Don't interfere between brothers.

Escribe antes que des y recibe antes que escribas: Write before you give and get before you write.

Escuchos al agujero, oiras de ti mal y del ajeno: Listen at the keyhole and you will hear ill of both yourself and your neighbor.

Fraile que pide por Dios pide por dos: A friar who asks alms for God's sake, asks for two.

Gato escaldado del agua fria tiene miedo: A scalded cat dreads cold water.

Goza tu del poco, mientras busca mas el loco: Enjoy your little while the fool seeks more.

Grano á grano hinche la gallina el papo: Grain by grain the hen fills her crop.

Habla poco y bien, y tenerte han por alguien: Speak little and well and you will be considered as somebody.

Hablar sin pensar es tirar sin encarar: Speaking without thinking is shooting without aiming.

Haceos miel y comeros las moscas: Make of yourself honey and the flies will eat you.

Hacer de la necesidad virtud: To make a virtue of necessity.

Harto ayuna quien mal come: He fasts enough who eats little.

Hazme la barba y hacerte he el copo: Trim my beard and I will trim your topknot.

Humo y gotera y mujer gritadera echar el hombre de su casa afuera: A smoky house, a leaky roof, and a scolding wife drive a man from home.

Hurtar el puerco y dar los pies por Dios: Some would steal a pig and give the feet for God's service.

La carcel y la cuaresma para los pobres es hecha: Prison and privation are the lot of the poor.

La mujer hermosa o' loca o' presuntuosa: A beautiful woman is either silly or presumptuous.

La mujer y el vidrio siempre estan en peligro: A woman and a mirror are always in danger.

Más cerca estan mis dientes que mis parientes: My teeth are nearer than my kindred.

Más es el ruido que los nueces: There is often more noise than nuts.

Más mato la cena que curo avicena: Suppers have killed more than health resorts have cured.

Más quiero asno que me lleve que caballo que me derrueque: Better an ass that will carry me than a horse that will throw me.

Más sabe el loco en su casa, que el cuerdo en la ajena: A fool knows more in his own house than a wise man does in a stranger's.

Más son los amenzados que los acuchillados: More are threatened than wounded.

Más vale pajaro en la mano que zorzal volando: A sparrow thou hast is better than a fine thrush at large.

Más vale verguenza en cara que mancilla en corazon: A blush on the cheek is better than a stain on the heart.

Mucho sabe la zorra pero mas el que la toma: The fox is very sly, and he is more so who catches him.

Ni á rico debas ni á pobre prometas: Owe nothing to a rich man; promise nothing to a poor one.

Ni firmes carta que no leas, ni bebas agua que no veas: Look at a letter before you sign it and at water before you drink it.

No es aquella gallina buena que come en tu casa y pone en la ajena: It is a bad hen that feeds at home and lays abroad.

No es todo oro que reluce: All glittering things are not gold.

No hay mejor maestra que necesidad y pobreza: There are no better masters than necessity and poverty.

No se acuerda el cura de cuando fué sacristan: The priest does not remember when he was sacristan.

Obra comun, obra de ningun: Everybody's work is nobody's work.

Oir ver y callar recias cosas son de obrar: To see, hear, and be silent are difficult.

Ojos que no ven, corazon que no llora: If the eyes do not see, the heart does not grieve.

Palabras de boca, piedras de honda: Words of the mouth are like stones of the sling.

Palabras y plumas viento las lleva: Words and feathers go with the winds.

Palabras de santo y uñas de gato: A saint's words and a cat's claws.

Para el mal que hoy acaba no es remedio el de mañana: To-morrow's remedy is too late for to-day's evil.

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Paso á paso van lejos: Fair and softly go far.

Pelean los ladrones y descubrense los hurtos: When thieves quarrel, thefts are discovered.

Perro ladrador nunca buen mordedor: A barking dog seldom bites.

Prenda que come ninguno la tome: Let no one accept a pledge that eats.

Quien adelante no mira, atras se queda: He who does not look forward remains behind.

Quien bien quiere á Beltran bien quiere á su perro: He who really loves Bertram loves his dog.

Quien compra lo que no puede, vende lo que le duele: He that buys beyond his means will sell against his wish.

Quien cuando puede no quiere, cuando quiere no puede: Who will not when he can will be willing when he cannot.

Quien en un año quiere ser rico, al medio le ahorcan: He who tries to grow rich in a year will be hanged in six months.

Quien fue á Sevilla perdio su silla: He who went to Seville lost his place.

Quien lava la cabeza del asno pierde el jabon y el tiempo: Whoever washes an ass's head loses time and soap.

Quien mal no hace, el mal no piensa: He that does no ill will not think any.

Quien mucho mira, poco hila: Who gazes much will spin little.

Quien no pone y siempre saca, suelo halla: He who always takes out and never puts in will soon find the bottom.

Quien no tiene miel en la orza ten galo en la boca: He that hath no honey in his jar had better have some in his mouth.

Quien su carro unta, sus bueyes ayuda: He that greases his cart helps his oxen.

Salir de lodazales y entrar en cenagales: Out of the quicksand into the mire.

Si el necio no fuese al mercado no se venderia lo malo: If fools did not go to market, the rubbish would never be sold.

Si quieres vivir sano hacerte viejo temprano: If you would live healthy, be old betimes.

Sobre dinero no hay amistad: There is no friendship in money matters.

Vanse los amores y quedan los dolores: Pleasure passes but sorrow remains.

Verdad de Pedro Grullo: Peter Grullo's truth (an axiom).

Yerba mala no la empee la helada: Weeds are not hindered by frost.

TABLE OF DISTANCES

San Francisco to	Cape Horn	6340 miles
Cape Horn	“ New York	7060 “
“ “	“ Valparaiso	1580 “
“ “	“ Rio de Janeiro	2260 “
Montevideo	“ Falkland Islands	1200 “
San Francisco	“ Panama	3473 “
“ “	“ Buenaventura	3609 “
“ “	“ Tumaco	3781 “
“ “	“ Esmeraldas	3869 “
“ “	“ Manta	4037 “
“ “	“ Ballenita	4124 “
“ “	“ Guayaquil	4283 “
“ “	“ Payta	4503 “
“ “	“ Pimentel	4655 “
“ “	“ Eten	4664 “
“ “	“ Pacasmayo	4698 “
“ “	“ Salaverry	4764 “
“ “	“ Callao	5044 “
“ “	“ Pisco	5163 “
“ “	“ Mollendo	5516 “
“ “	“ Arica	5650 “
“ “	“ Pisagua	5721 “
“ “	“ Iquique	5760 “
“ “	“ Cobija	5908 “
“ “	“ Antofagasta	5987 “
“ “	“ Caldera	6210 “
“ “	“ Huasco	6309 “
“ “	“ Coquimbo	6408 “
“ “	“ Valparaiso	6606 “

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